6. Interfaces Between the ECS SDPS and the ASTER GDS SDPS

6.1 Overview

This section describes the interfaces for data and information exchange between ECS SDPS and ASTER GDS SDPS, including data exchanges in support of catalog interoperability (user search and order), ASTER DAR submittal/statusing, exchange of data shipping notices, orbit data anomaly notifications, and delivery of data products.

6.2 Catalog Interoperability

This section contains a detailed definition of each data interface between ECS and the ASTER GDS that is required to support two-way catalog interoperability. In particular, an identification of each data flow is provided along with a discussion of the functional purpose of that flow and the detailed format and contents of each interface. This section also identifies the mandatory/optional extensions to the V0 protocols that need to be added in order to take advantage of new ECS Version 1 (V1) services.

Since the above-referenced messages are implemented using Object Description Language (ODL), an example of the ODL normalization forms and standardized conventions is provided in Figure 6-1. These standardized conventions, which provide a formal method of describing ODL commands, include the following rules:

a. keywords are words that have a special meaning in ODL, itself, and are treated as instructions.

b. all keyword are printed in CAPS

c. items in square brackets ([ ]) are options.

d. items in parentheses (...) indicate that these items may be repeated any number of times

e. after the parentheses (...) a single character is given that tells how many occurrences are allowed; i.e.,

   1. a '*' means zero or more occurrences

   2. a '+' means one or more occurrences

f. Each group is further defined down to its keyword components.

In Appendix B, each keyword is defined in terms of the following items of information, as appropriate:

a. synopsis (short English-Language description of the keyword),

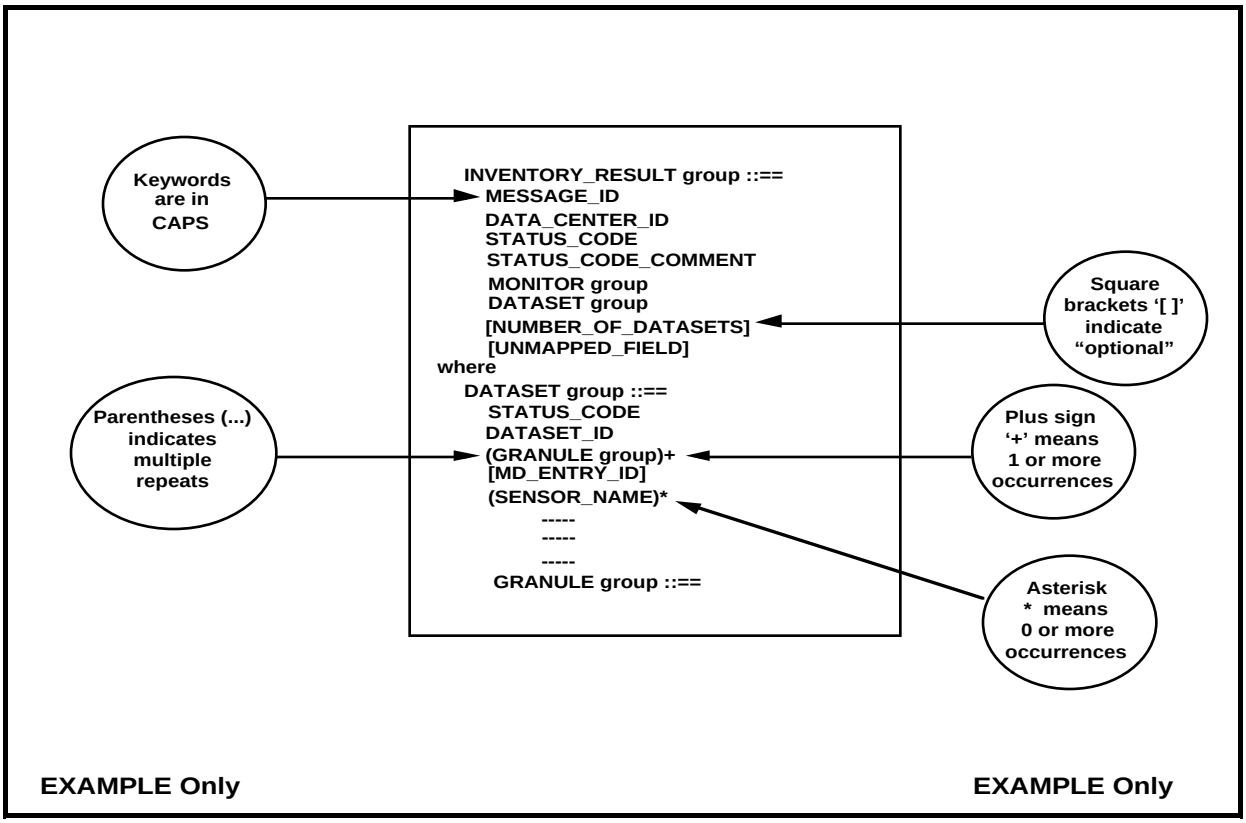


Figure 6-1. Example of ODL Normalization Form Illustrating Conventions

b. parent groups,

c. children,

d. ODL type; e.g.,

   1. integer,

   2. real,

   3. date,

   4. string,

   5. aggregate,

   6. symbol,

   7. sequence string,

   8. character string

e. maximum value length

f. possible values.

6.2.1 Data Flows Between ASTER Gateway and ASTER SDPS Servers For Requests Originating from ECS Users

The data flows between the ASTER Gateway and the ASTER SDPS Servers, for requests originating from ECS users are depicted in Figure 6-2. Specifically, the following data flows are depicted:

a. Inventory Search Request

b. Inventory Search Results

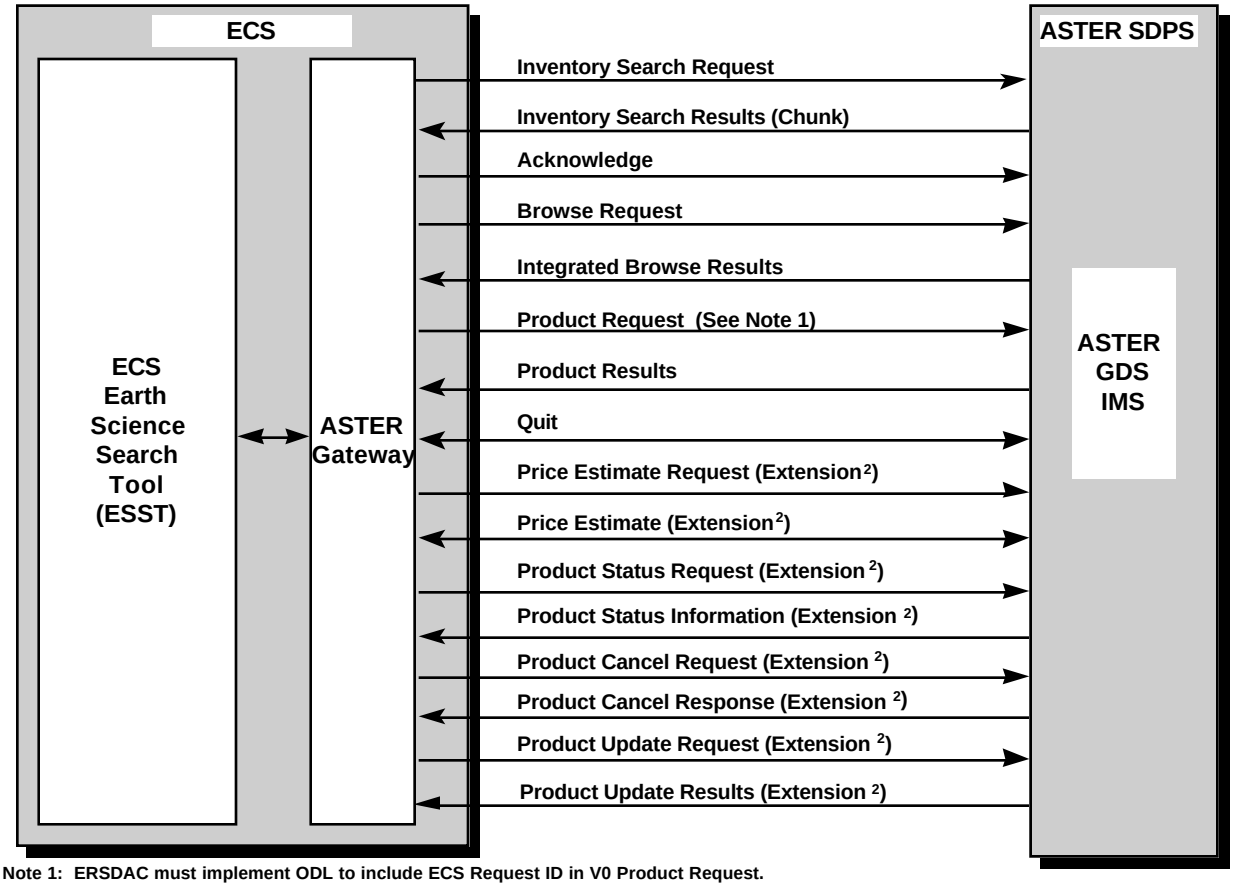
c. Acknowledge

d. Browse Request

e. Integrated Browse Results

f. Product Request

g. Product Results



Note 1: ERSDAC must implement ODL to include ECS Request ID in V0 Product Request.
Note 2: Message which is not supported by V0, but is added to V0 protocol to exploit new ECS V1 services.

Figure 6-2. Interfaces Between ECS Earth Science Search Tool and ASTER SDPS

h. Quit

i. Price Estimate Request (extension*)

j. Price Estimate (extension*)

k. Product Status Request (extension*)

l. Product Status Information (extension*)

m. Product Cancel Request (extension*)

n. Product Cancel Results (extension*)

o. Product Update Request (extension*)

p. Product Update Result (extension*)

***Note: An extension is a message which is not supported by Version 0, but is specifically added to the V0 protocol in order to exploit new ECS Version 1 services. ERSDAC has agreed to provide the definition of these extensions.**

All of the messages described above in Figure 6-2 are implemented using Object Description Language (ODL). (For a description of ODL refer to the User's Guide for the Object Description Language Processing Software Library, Release 2.1 - Draft). All of these messages are handled by the IMS Kernel (IK) layer [Note: the ASTER Gateway and the ASTER SDPS IMS contain several software modules, at the communications (lowest) layer, which serve as library routines and are, collectively, referred to as the IK layer]. Each of these messages is described, in detail, in the sections which follow.

The ASTER Gateway translates between these V0 protocols and OODCE/ESQL which is understood by ECS.

6.2.1.1 Directory Information

The ASTER Gateway configuration will include the advertisement of the data sets provided by the ASTER GDS. The ECS Client will search the advertising service to retrieve advertisements. This advertisement search is equivalent to a directory search.

6.2.1.2 Inventory Search Request/Results and Acknowledge

The purpose of the inventory search is to aid a user in searching through the available inventory, locating and retrieving metadata about specific granules of the product(s) of interest, and determining whether any granules should be ordered. The search criteria, specified by the user, are based on the following searchable attributes: source, sensor, geophysical parameter, dataset name, data center id, geographical coordinates (area), temporal intervals. An inventory search request for ASTER GDS IMS services, originating from an ECS user, is entered via the ASTER Gateway. The ASTER Gateway sends the ASTER SDPS Servers inventory search criteria based on characteristics of the data. The ASTER SDPS Servers retrieve the requested granules metadata,

and sends these items back to the ASTER Gateway. The basic "building blocks" for a chunk/tree include the following items of information:

a. Inventory Result Prefix - This item of information consists of the following sub-items:

   1. Message_ID

   2. Data_Center_ID

   3. Status Code

   4. Status_Code_Comment (optional)

   5. Unmapped_Field (optional)

   According to the rule, every chunk/tree must contain an Inventory Result Prefix.

b. Package Group - This includes metadata about collections of granules that can be ordered from an archive. The package group can be part of a dataset group or can be outside the dataset groups according to three options to be discussed in the paragraphs below.

c. Dataset Group - This item includes metadata within the Dataset Group. Every chunk may contain 0 or more items of Dataset Group metadata.

d. Granule Group - This item includes metadata within the Granule Group. According to the rule, every chunk will include 0 or more Granule Group information items. It is always part of a dataset group.

A package is collection of granules or data which can be ordered from an archive. An ASTER GDS Server can integrate package information into the chunk/tree according to the following three options:

a. Option 1 - Insert all Package Groups ahead of the first Dataset Group

b. Option 2 - Insert relevant Package Groups ahead of each Dataset Group

c. Option 3 - Embed relevant Package Groups inside each Dataset Group

Although a single INVENTORY_RESULT tree could be transmitted containing the entire response to an INVENTORY_REQUEST, the result would often be a very large tree. To make the socket messages more easily handled, the total result can be sent by servers as a number of smaller trees called chunks, each containing part of the total results. Clients logically merge the chunks back into the total message that form the total inventory results tree. When the V0 protocol was originally being developed, chunks were limited to 64KB in deference to VMS limitations. This size limit is now just a guideline. Many servers control chunking based on number of repeating groups (granules or packages) rather than on number of bytes.

A chunk always begins with the Inventory Result Prefix, which is followed by:

a. some number of package groups and nothing else; or

b. some number of package groups followed by some number of data set groups (possibly containing, in turn, some number of granule groups)

c. some number of data set groups (usually containing granule groups)

d. some number of data set groups (containing package groups and possibly granule groups)

The ASTER Gateway returns a separate acknowledge message to the ASTER SDPS Servers upon receiving each chunk. The Inventory Search Request and Inventory Search Results messages are implemented using ODL---their ODL Normalization Forms are defined in the immediately-following sections. [A discussion of the ODL standardized conventions is provided as reference in Section 4.1. Detailed definitions of the message keywords (e.g., MESSAGE_ID) are provided in Appendix B].

In order to accommodate two-way mapping of terminology between ECS and the ASTER SDPS, the ASTER Gateway maintains a Sybase database containing the terminology mapping information. The ASTER Gateway database is built by a Gateway Administrator using ASTER Gateway search parameters, ECS schema and metadata. Specifically, upon receiving a request from the ECS, the ASTER Gateway performs a ECS-ASTER mapping table look-up within the ASTER Gateway database, converting the ECS request into ASTER SDPS terminology. Similarly, results returned from the ASTER SDPS to the ASTER Gateway are converted, via the ASTER-ECS mapping service, to ECS terminology prior to returning these results to the ECS. The ASTER Gateway-to-Sybase mapping interfaces are completely documented in CDRL #305-CD-023-002, Release B SDPS Data Management Subsystem Design Specification for the ECS Project.

6.2.1.2.1 ODL Normalization Form for Inventory Search Request

The ODL Normalization Form for the ASTER Gateway-to-ASTER SDPS Servers Inventory Search Request (i.e., request originating from ECS user) message is provided below.

```
INVENTORY_SEARCH group ::==
     MESSAGE_ID
     [AUTHENTICATOR]
     [ECS_AUTHENTICATOR]
     GRANULE_LIMIT
     [BROWSE_ONLY]
     [CAMPAIGN]
     [DATASET_ID]
     [SENSOR_NAME]
     [SOURCE_NAME]
     [START_DATE]
     [STOP_DATE]
     [START_DAY_OF_YEAR]
     [STOP_DAY_OF_YEAR]
     [DAY_NIGHT]
     [PROCESSING_LEVEL]
     [PARAMETER]
     [XAR_ID]                                Note: Only applicable from ECS to ASTER GDS
     [CLOUD_COVERAGE]                        Note: Only applicable from ECS to ASTER GDS
     GlOBAL_GRANULES_ONLY            ||      Note:
     POINT_LOC  group                ||                 One of these five groups must
     POLYGON_LOC  group                      ||                be sent with the search
     RANGE_LOC  group                ||                 (based on user selection).
     XHAIRS  group                   ||
     MONITOR  group
     VERSION group

POINT_LOC group ::==
```

```
     LATITUDE
     LONGITUDE

POLYGON_LOC group ::==
     LATITUDE
     LONGITUDE
     [POLE_INCLUDED]
     MAP_PROJECTION_TYPE
     TANGENT_LATITUDE
     TANGENT_LONGITUDE

RANGE_LOC group ::==
     NORTH_LATITUDE
     SOUTH_LATITUDE
     EAST_LONGITUDE
     WEST_LONGITUDE

XHAIRS group ::==
     LATITUDE
     LONGITUDE
     LATITUDE_DISTANCE
     LONGITUDE_DISTANCE

MONITOR group ::==
     TX_CLIENT
     [RX_SERVER]
     [TX_SERVER]
     [RX_CLIENT]

VERSION group ::==
     PROTOCOL_VERSION
     SENDER_VERSION
     [IMS_STAFF]
```

6.2.1.2.2 ODL Normalization Form for Inventory Search Results

The ODL Normalization Form for the ASTER SDPS Servers-to-ASTER Gateway Inventory Search Results message is provided below.

Note: Source, sensor and parameter information can be put either in DATASET or GRANULE groups. See annotations.

```
INVENTORY_RESULT group ::==
     MESSAGE_ID
     DATA_CENTER_ID
     STATUS_CODE
     [STATUS_CODE_COMMENT]
     MONITOR group
    VERSION group
    (PACKAGE group)*::==      Note: repeated group
                              OPTION 1: for use when all package information is sent for the
                              whole inventory result.
                              OPTION 2: for use when package information is sent in front of
                              each relevant dataset group.
     (DATASET group)*
     [NUMBER_OF_DATASETS] Note: present only in the last chunk for an inventory results set

     [UNMAPPED_FIELD]

PACKAGE group ::==
     DATA_CENTER_ID
```

```
     DATASET_ID
     PACKAGE_ID   Note: The PACKAGE_ID in the PACKAGE group gives an arbitrary identifier by
       which the package is known. Processing and media options for the package are provided
       in the group. GRANULE groups can list multiple packages in which they are available.
       For the common case where granules can be ordered in single-granule packages and all
       such packages have the same processing and media options, a single package group can be
       provided whose id is "*". Then each granule that can be ordered this way can be listed
       as being in PACKAGE ID "*" (along with possibly other named packages).
     COMMENT
     [INFO_PROMPT]
     NUMBER_OF_GRANULES
     NUMBER_OF_OPTIONS
     (PROCESSING OPTIONS group)+
     (MEDIA_TYPE group)+

PROCESSING_OPTIONS group ::==
     OPTION_ID
     PACKAGE_SIZE.
     NUMBER_OF_MEDIA_TYPE
     (MEDIA_TYPE group)+

MEDIA_TYPE group ::==
     TYPE_ID
     NUMBER_OF_MEDIA_FORMAT
     (MEDIA_FORMAT)+

MEDIA_FORMAT group ::==
     FORMAT_ID
     APPROX_COST

DATASET group ::==
     STATUS_CODE
     DATASET_ID
     (VALID_ACCOUNTS group)*
     (PACKAGE group)*
                                Note:  OPTION 3: for use when package information is sent
                                within each relevant dataset group and before the granule
                                group(s).
     (GRANULE group)*           Note: repeated group
     [MD_ENTRY_ID]
     [SENSOR_NAME]              (See Note 1)
     [SOURCE_NAME]              (See Note 2)
     [PARAMETER]                (See Note 3)
     [COMMENT]
     [RESTRICTION]
     [CAMPAIGN]
     [DAY_NIGHT]
     [PROCESSING_LEVEL]
     [NUMBER_OF_GRANULE_HITS] Note:  omitted from all chunks except the one containing the
       last granule of the dataset)
     [BROWSE_PRODUCT_DESCRIPTION] Note:  the headings should be done in UPPERCASE on lines by
       themselves in the sequence, i.e. PRIMARY PURPOSE, PRODUCT HISTORY, etc)

VALID_ACCOUNTS group ::==
     ACCOUNT_NUMBER
     [BALANCE]
     [ERROR]

GRANULE group ::==
     GRANULE_ID
     [XAR_ID]
     [SCENE_CLOUD_COVERAGE]
     [QUADRANT_CLOUD_COVERAGE]
     START_DATE
     STOP_DATE
```

```
    [SENSOR_NAME]  (See Note 1)
    [SOURCE_NAME]  (See Note 2)
    [PARAMETER]    (See Note 3)
    [BROWSE_TYPE]
    [CAMPAIGN]
    [COMMENT]
    [DAY_NIGHT]
    [PROCESSING_LEVEL]
    [PACKAGE_ID] Note:  If omitted or if package information is not provided within the
      inventory results, granule cannot be ordered.

    Note 1 - If all granules of the dataset have the same values for SENSOR_NAME, the value
             can be specified in the DATASET group and omitted from all of the GRANULE
             groups.)

    Note 2 - If all granules of the dataset have the same values for SOURCE_NAME, the value
             can be specified in the DATASET group and omitted from all of the GRANULE
             groups.)

    Note 3 - If all granules of the dataset have the same values for PARAMETER_NAME, the
             value can be  specified in the DATASET group and omitted from all of the GRANULE
             groups.)

    GLOBAL_GRANULE
    POINT_LOC group |
    POLYGON_LOC group |
    RANGE_LOC group

POINT_LOC group ::==
    LATITUDE
    LONGITUDE

POLYGON_LOC group ::==
    LATITUDE
    LONGITUDE
    [POLE_INCLUDED]
    CENTROID_LAT
    CENTROID_LON

RANGE_LOC group ::==
    NORTH_LATITUDE
    SOUTH_LATITUDE
    EAST_LONGITUDE
    WEST_LONGITUDE

MONITOR group ::==
    TX_CLIENT
    RX_SERVER
    TX_SERVER
    [RX_CLIENT]

VERSION group ::==
    PROTOCOL_VERSION
    SENDER_VERSION
    [IMS_STAFF]
```

6.2.1.2.3 ODL Normalization Form for Acknowledge

The ODL Normalization Form for the ASTER Gateway-to-ASTER SDPS Servers Acknowledge message is provided below.

```
ACKNOWLEDGE group ::==
    MESSAGE_ID
```

```
    MONITOR group
    VERSION group

MONITOR group ::==
    TX_CLIENT
    [RX_SERVER]
    [TX_SERVER]
    [RX_CLIENT]

VERSION group ::==
     PROTOCOL_VERSION
    SENDER_VERSION
    [IMS_STAFF]
```

6.2.1.3 Browse Request/Results

The purpose of the Browse service is to allow the user to request and receive "representative" images for viewing and for analysis prior to deciding on specific full-resolution products to order.

The Integrated Browse service allows the user to view the browse product through the ECS Client. An integrated browse request sent by the ECS ESST, via the ASTER Gateway, to the ASTER SDPS Servers. The ASTER SDPS Servers send back, via the ASTER Gateway, to the ECS ESST, the integrated browse results message, followed by the browse image which is then displayed to the user.

All ASTER GDS browse images are provided in the National Super Computing Applications (NCSA) Hierarchical Data Format (HDF), Version 4.0.

The Browse Request/Results messages are implemented using ODL---their ODL Normalization Forms are defined in the immediately-following sections. [A discussion of the ODL standardized conventions is provided as a reference in Section 4.1. Detailed definitions of the message keywords (e.g., MESSAGE_ID) are provided in Appendix B].

Integrated browse transmitted in separate files utilize the LAST_BROWSE flag in the INTEGRATED_BROWSE_RESULTS message. The LAST_BROWSE = 0 flag indicates to the client that the final file of the integrated browse has not been transmitted. The LAST_BROWSE flag is set equal to 1 when the last browse file is transmitted. However, this is optional and assumed when omitted. Refer to Figure 6-3 for details on transmission of multiple files in an integrated browse.

6.2.1.3.1 ODL Normalization Form for Browse Request

The ODL Normalization Form for the ASTER Gateway-to-ASTER SDPS Servers Browse Request message is presented below.

```
BROWSE_REQUEST group ::==
    MESSAGE_ID
    [AUTHENTICATOR]
    [ECS_AUTHENTICATOR]
    DATA_CENTER_ID
    USER_AFFILIATION group
BROWSE_TYPE
    BROWSE_GRANULES group
    CONTACT_ADDRESS group
```

```
    MONITOR group
    VERSION group
```

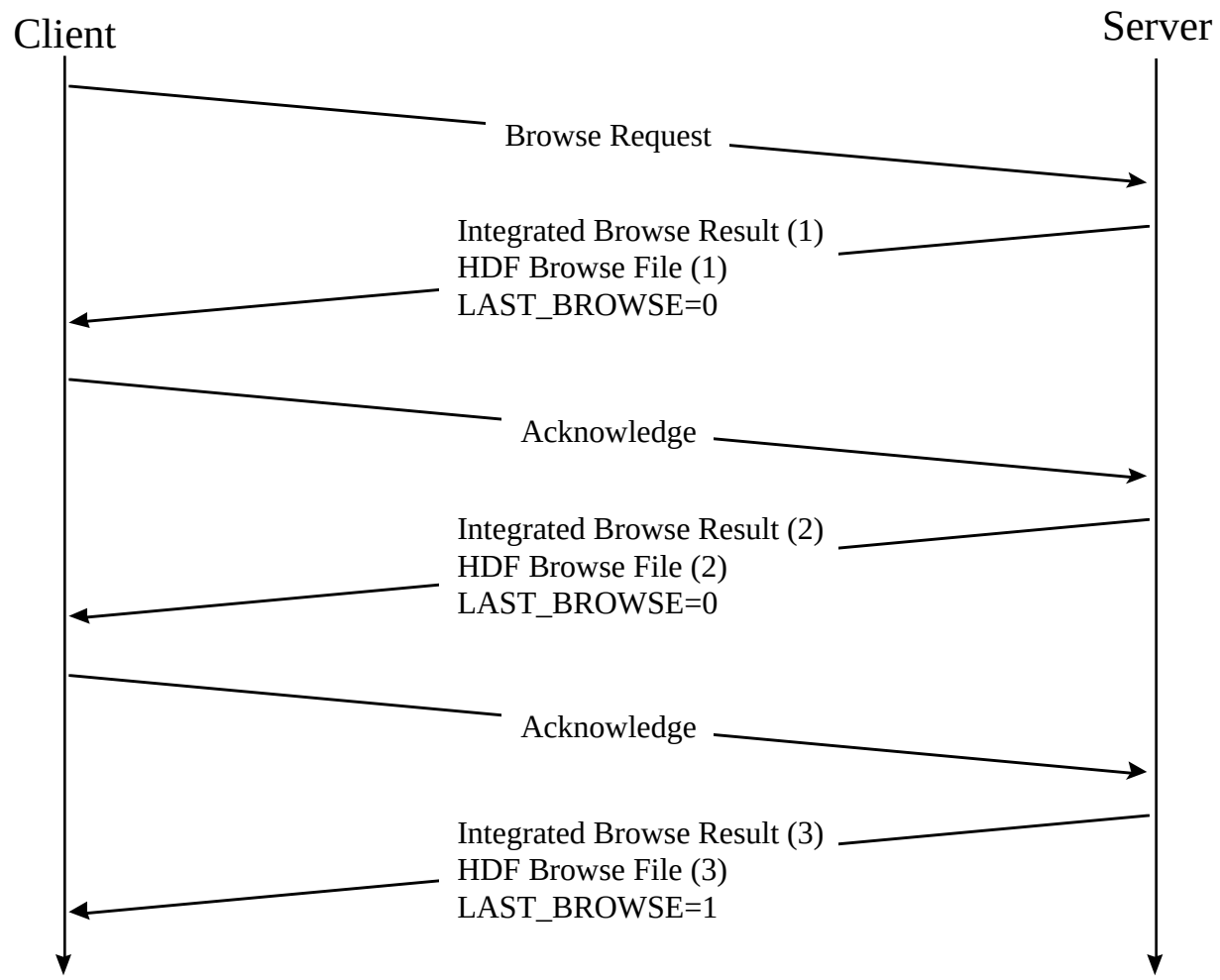


Figure 6-3. Multi-file Integrated Browse

```
BROWSE_GRANULES group::==
    DATASET_ID
    GRANULE_ID

CONTACT_ADDRESS group ::==
     [TITLE]
     LAST_NAME
     FIRST_NAME
      [MIDDLE_INITIAL]
     ORGANIZATION
     ADDRESS
     CITY
     [STATE]
     [ZIP]
     COUNTRY
```

```
     PHONE
     [FAX]
     EMAIL

MONITOR group ::==
    TX_CLIENT
    [RX_SERVER]
    [TX_SERVER]
    [RX_CLIENT]

VERSION group ::==
     PROTOCOL_VERSION
    SENDER_VERSION
    [IMS_STAFF]

USER_AFFILIATION group ::==
    CATEGORY
    TYPE
```

6.2.1.3.2 ODL Normalization Form for Integrated Browse Results

The ODL Normalization Form for the ASTER SDPS Servers-to-ASTER Gateway Integrated Browse Results message is presented below:

```
INTEGRATED_BROWSE_RESULT::==
    MESSAGE_ID
    DATA_CENTER_ID
    STATUS_CODE
     STATUS_CODE_COMMENT_IMAGE_group
    [LAST_BROWSE]
    MONITOR group
    VERSION group

IMAGE group ::==
    DATASET_ID
    GRANULE_ID
    IMAGE_ID
    IMAGE_SIZE

MONITOR group ::==
    TX_CLIENT
    RX_SERVER
    TX_SERVER
    [RX_CLIENT]

VERSION group ::==
     PROTOCOL_VERSION
    SENDER_VERSION
    [IMS_STAFF]
```

The INTEGRATED_BROWSE_RESULT message is followed by the browse file itself transferred as a binary stream of IMAGE_SIZE bytes. If there are multiple browse files, each has a INTEGRATED_BROWSE _RESULT message before it.

6.2.1.4 Product Request/Result

The Product Request allows the user to order ASTER GDS data products through the ASTER Gateway. After the user has successfully searched, located, and viewed the inventory data for the data sets and selected the granules desired, the user has the option to view certain

“}representative”} images. Only at this point is the user permitted to submit a product request if he/she desires. The Product Request is sent from the ASTER Gateway to the ASTER SDPS Servers. The Product Result is sent from the ASTER SDPS Servers to the ASTER Gateway. The Product Result provides a confirmation of the archive's receipt of the Product Request and provides contact information for further inquiries. The actual product is distributed by the ASTER GDS IMS via physical media. It should be noted that the Product Request must include the ECS Request ID.

6.2.1.4.1 ODL Normalization Form for Product Request

The ODL Normalization Form for the ASTER Gateway-to-ASTER SDPS Servers Product Request message is presented below:

```
PRODUCT_REQUEST group ::==
     MESSAGE_ID
     INITIATOR_REQUEST_ID
     DATA_CENTER_ID
     [AUTHENTICATOR]
     [ECS_AUTHENTICATOR]
     [INITIAL_USER_KEY]
     USER_AFFILIATION group
     CONTACT_ADDRESS group
     [SHIPPING_ADDRESS] group
     [BILLING_ADDRESS] group
     (MEDIA Group)+
     MONITOR group
     VERSION group

MEDIA  group ::==
     TYPE_ID
     FORMAT_ID
     (PRODUCT_DELIVERY group)+

     PRODUCT_DELIVERY group::==
         DATASET_ID
         PACKAGE_ID
         SENSOR_TYPE
         (PRODUCT_GENERATION group)*

         PRODUCT_GENERATION group::==
             PRODUCT_TYPE
             (PARAMETER group)*

             PARAMETER group::==
                 PGR_CODE
                 PGR_VALUE
             END_GROUP = PARAMETER


USER_AFFILIATION group ::==
     CATEGORY
     TYPE

CONTACT_ADDRESS group ::==
     [TITLE]
     LAST_NAME
     FIRST_NAME
     [MIDDLE_INITIAL]
```

```
    ORGANIZATION
    ADDRESS
    CITY
    [STATE]
    [ZIP]
    COUNTRY
    PHONE
    [FAX]
    EMAIL      Note: for Product Request

SHIPPING_ADDRESS group ::==          Note:  Optional group
    [TITLE]
    LAST_NAME
    FIRST_NAME
    [MIDDLE_INITIAL]
    [ORGANIZATION]
    [ADDRESS]
    CITY
    [STATE]
    [ZIP]
    COUNTRY
    PHONE
    [FAX]
    [EMAIL]

BILLING_ADDRESS group ::==   Note:  Optional group
    [TITLE]
    LAST_NAME
    FIRST_NAME
    [MIDDLE_INITIAL]
    [ORGANIZATION]
    [ADDRESS]        Note: Billing address will be set to a NASA billing address.
    CITY
    [STATE]
    [ZIP]
    COUNTRY
    PHONE
    [FAX]
    [EMAIL]

MONITOR group ::==
    TX_CLIENT
    [RX_SERVER]
    [TX_SERVER]
    [RX_CLIENT]

VERSION group ::==
    PROTOCOL_VERSION
    SENDER_VERSION
    [IMS_STAFF]
```

6.2.1.4.2 ODL Normalization Form for Product Result

The ODL Normalization Form for the ASTER SDPS Servers-to-ASTER Gateway Product Result message is presented below:

```
PRODUCT_RESULT group ::==
    MESSAGE_ID
    DATA_CENTER_ID
    STATUS_CODE
    [STATUS_CODE_COMMENT]
```

```
    (DAAC_CONTACT_ADDRESS group)+               Note: repeatable to support gateways/systems
       that are consortia of multiple archives such as "}ECS"} which has multiple DAACs.
       Whenever one DATA_CENTER_ID is really multiple contacts for different data sets, this
       is a way to provide those additional contacts.  The name DAAC here remains for
       historical reasons.

    MONITOR group
    VERSION group

DAAC_CONTACT_ADDRESS group ::==
    CONTACT_NAME
    ORGANIZATION
    [ADDRESS]
    CITY
    [STATE ]
    [ZIP]
    COUNTRY
    PHONE
    [FAX]
    [EMAIL]

MONITOR group ::==
    TX_CLIENT
    RX_SERVER
    TX_SERVER
    [RX_CLIENT]

VERSION group ::==
    PROTOCOL_VERSION
    SENDER_VERSION
    [IMS_STAFF]
```

6.2.1.5 Quit

During any given session, problems may necessitate premature termination of the process. In such cases, a bi-directional quit message is transmitted between the ASTER SDPS Servers and the ASTER Gateway, as appropriate. Specifically, the ASTER Gateway sends a quit message to the ASTER SDPS Servers if the user presses the "abort" button on the screen. On the other hand, the quit message is sent by the ASTER SDPS Servers to the ASTER Gateway if an error condition terminates the response. Quit messages are also used to synchronize the ASTER Gateway with the ASTER SDPS Server following the last chunk in an inventory result---the ASTER SDPS Server sends a QUIT with a STATUS_CODE of 1 to the ASTER Gateway.

6.2.1.5.1 ODL Normalization Form for Quit

The ODL Normalization Form for the ASTER SDPS Servers-to-ASTER Gateway Quit Notification is presented below:

```
QUIT group ::==
    MESSAGE_ID
    [DATA_CENTER_ID]
    STATUS_CODE
    [STATUS_CODE_COMMENT]
    [AUTHENTICATOR]
    [ECS_AUTHENTICATOR]
    MONITOR group
    VERSION group
```

```
MONITOR group ::==
     [TX_CLIENT]
     [RX_SERVER]
     [TX_SERVER]
     [RX_CLIENT]

VERSION group ::==
     PROTOCOL_VERSION
     SENDER_VERSION
     [IMS_STAFF]
```

6.2.1.6 Product Cancel Request/Result

The operations concept for canceling a request is to first ask for status and obtain the top-level request ID and then each sub-request ID. Given this, the user can attempt to cancel the entire order or an individual request within an order. Therefore, the following message can be used to cancel an order or a sub-request within that order.

6.2.1.6.1 ODL Normalization Form for Product Cancel Request

```
PRODUCT_CANCEL_REQUEST group::==
     MESSAGE_ID
     INITIATOR_REQUEST_ID
     (SUB_REQUEST_ID)*
     MONITOR_group
     VERSION_group

MONITOR group ::==
     TX_CLIENT
     [RX_SERVER]
     [TX_SERVER]
     [RX_CLIENT]

VERSION group ::==
     PROTOCOL_VERSION
     SENDER_VERSION
     [IMS_STAFF]
```

If any SUB_REQUEST_Ids are provided, then only those sub-requests are attempted to be canceled. If no SUB-REQUEST_Ids are supplied then entire order is attempted to be canceled. The result message is as follows:

6.2.1.6.2 ODL Normalization Form for Product Cancel Result

```
PRODUCT_CANCEL_RESULT group::==
     MESSAGE_ID
     DATA_CENTER_ID
     STATUS_CODE
     [STATUS_CODE_COMMENT]
     INITIATOR_REQUEST_ID
     [ORDER_STATUS_CODE]
     [ORDER_STATUS_COMMENT]
     (SUB_REQUEST_INFO group)*
     MONITOR group
     VERSION group

SUB_REQUEST_INFO group::==
     SUB_REQUEST_ID
```

```
     [REQUEST_STATUS_CODE]
     [REQUEST_STATUS_COMMENT]

MONITOR group ::==
     TX_CLIENT
     [RX_SERVER]
     [TX_SERVER]
     [RX_CLIENT]

VERSION group ::==
     PROTOCOL_VERSION
     SENDER_VERSION
     [IMS_STAFF]
```

This group returns a success/fail and comment for each request attempted to be canceled.

This message proposal was intended to only allow all or part of an INITIATOR_REQUEST_ID to be canceled. Note that the INITIATOR_REQUEST_ID is not repeated. Therefore, there is no need to group the INITIATOR_REQUEST_ID with the SUB_REQUEST_IDs. All the SUB_REQUEST_IDs should relate to the one INITIATOR_REQUEST_ID specified in the request.

6.2.1.7 Product Status Request/Information

6.2.1.7.1 ODL Normalization Form for Product Status Request

```
PRODUCT_STATUS_REQUEST group::==
     MESSAGE_ID
     (INITIATOR_REQUEST_ID)+
     MONITOR group
     VERSION group

MONITOR group ::==
     TX_CLIENT
     RX_SERVER
     TX_SERVER
     [RX_CLIENT]

VERSION group ::==
     PROTOCOL_VERSION
     SENDER_VERSION
     [IMS_STAFF]
```

If no INITIATOR_REQUEST_ID is supplied, then all the requests for a given INITIATOR_REQUESTER_ID will be supplied in the result. The results that are returned are in the following message:

6.2.1.7.2 ODL Normalization Form for Product Status Information

```
PRODUCT_STATUS_INFO group::==
     MESSAGE_ID
     DATA_CENTER_ID
     STATUS_CODE
     [ STATUS_CODE_COMMENT]
     (ORDER_STATUS_INFO group)+
     MONITOR group
     VERSION group
```

```
ORDER_STATUS_INFO_ group
     INITIATOR_REQUEST_ID
     RECEIVE_DATE                    Note: The date the order was created.
     PLANNED_COMPLETION_DATE
     [COMPLETION_DATE]
     PRICE
     ORDER_STATUS_CODE
     [ORDER_STATUS_COMMENT]       Note: Description of In Progress  status.
     SHIPPING_ADDRESS_group
     (SUB_REQUEST_STATUS_INFO group)+

     SUB_REQUEST_STATUS_INFO group::==
         SUB-REQUEST_ID                Note: This is the request ID for a portion of the order.
         REQUEST_STATUS_CODE
         [REQUEST_STATUS_COMMENT]
         [COMPLETION_DATE]
                          Note: ASTER GDS doesn't provide COMPLETION_DATE by SUB_REQUEST_ID
                          in STATUS_INFO group. ECS does provide this so the user will know
                          which sub-requests are done, but this can be optional.
         [PROCESSING_DATA_CENTER]       Note: Returned from ECS only
         TYPE_ID
         FORMAT_ID
         DATASET_ID
         [NUMBER_OF_GRANULES]

MONITOR group ::==
     TX_CLIENT
     RX_SERVER
     TX_SERVER
     [RX_CLIENT]

VERSION group ::==
     PROTOCOL_VERSION
     SENDER_VERSION
     [IMS_STAFF]
```

ECS requests are not necessarily partitioned by media type. Sometimes, the order may be partitioned by DAAC and then by media type. So the result message may have two subrequests with the same media type, for example, DAAC=GSFC, MEDIA=8mm and DAAC=LaRC, MEDIA=8mm.

6.2.1.8 Price Estimate Request/Result

6.2.1.8.1 ODL Normalization Form for Price Estimate Request

The Price Estimate Request includes product generation parameters

```
PRICE_ESTIMATE_REQUEST group ::==
     MESSAGE_ID
     DATA_CENTER_ID
     (MEDIA group)+                          Note: repeated group

     MONITOR group
     VERSION group

     MEDIA group ::==
         TYPE_ID
         FORMAT_ID
         (PRODUCT_DELIVERY group )+         Note: repeated group
```

```
        PRODUCT_DELIVERY group ::==
            DATASET_ID
            PACKAGE_ID
            SENSOR_TYPE
             (PRODUCT_GENERATION group)*    Note: repeated and optional

             PRODUCT_GENERATION group ::==
                 PRODUCT_TYPE
                 (PARAMETER group)*

             PARAMETER_group::==
                 PGR_CODE
                 PGR_VALUE
             END_GROUP = PARAMETER

MONITOR group ::==
    TX_CLIENT
    [RX_SERVER]
    [TX_SERVER]
    [RX_CLIENT]

VERSION group ::==
    PROTOCOL_VERSION
    SENDER_VERSION
    [IMS_STAFF]
```

6.2.1.8.2 ODL Normalization Form for Price Estimate Result

```
PRICE_ESTIMATE_RESULT group ::==
    MESSAGE_ID
    DATA_CENTER_ID
    STATUS_CODE
    [STATUS_CODE_COMMENT]
    ESTIMATED_PRICE
    [PRICE_COMMENT]
    PREDICTED_COMPLETION_DATE
    MONITOR group
    VERSION group

MONITOR group ::==
    TX_CLIENT
    RX_SERVER
    TX_SERVER
    [RX_CLIENT]

VERSION group ::==
    PROTOCOL_VERSION
    SENDER_VERSION


   [IMS_STAFF]
```

6.2.1.9 Product Update Request/Result

6.2.1.9.1 ODL Normalization Form for Product Update Request/Result

The ODL Normalization Form for the ASTER Gateway-to-ASTER SDPS Servers Product Update Request/Results message is presented below:

PRODUCT_STATUS_UPDATE group ::==

MESSAGE_ID

INITIATOR_REQUEST_ID

[PROCESSING_COMMENT]

[COMPLETION_DATE]

ACTUAL_PRICE

MESSAGE_ID and INITIATOR_REQUEST_ID are the same as all the other messages.

PROCESSING_COMMENT - Optional comment to be set as part of the completion status of the Order for the operator's information.

ODL Type: string

Maximum Length: 255

COMPLETION_DATE - Optional date the order became complete for the operator and user's information.

ODL Type: Date

Possible values: <see START_DATE>

Maximum Length: 20

ACTUAL_PRICE - Price in yen of the request. This is used by NASA and ERSDAC in order to bill the user. The ASTER Gateway will convert from or to dollars as appropriate.

ODL Type: Integer

Possible values: >= 0

6.2.2 Data Flows Between ASTER SDPS and ASTER Gateway (or ECS Document Data Server) For Requests Originating From ASTER GDS Users

The data flows between the ASTER SDPS and the ASTER Gateway (or ECS Document Data Server), for requests originating from ASTER SDPS users and results destined for ASTER SDPS users, are depicted in Figure 6-4. Specifically, the following data flows are depicted:

a. Between ASTER SDPS and the ASTER Gateway

1. Directory Search Request

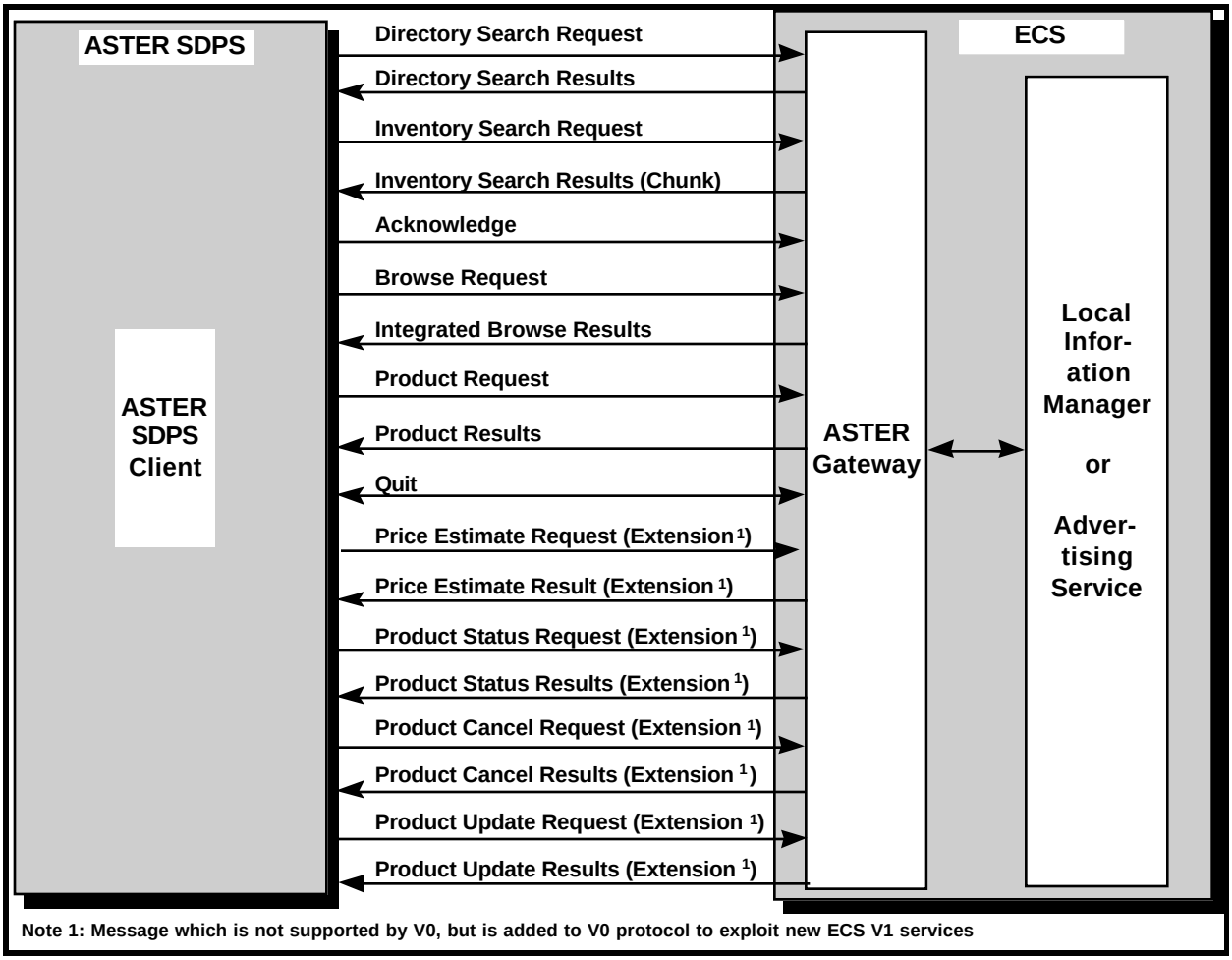


Figure 6-4. Interfaces Between ASTER SDPS and ECS Servers for Catalog Interoperability

2. Directory Search Results
3. Inventory Search Request
4. Inventory Search Results
5. Acknowledge
6. Browse Request
7. Browse Results
8. Product Request
9. Product Results
10. Quit
11. Price Estimate Request (Extension)
12. Price Estimate Result (Extension)
13. Product Status Request (Extension)
14. Product Status Results (Extension)
15. Product Cancel Request (Extension)
16. Product Cancel Results (Extension)
17. Product Update Request (Extension)
18. Product Update Result (Extension)

All of the above messages will be implemented using Object Description Language (ODL). (For a description of ODL refer to the User's Guide for the Object Description Language Processing Software Library, Release 2.1 - Draft). All of these messages are handled by the IMS Kernel (IK) layer [Note]: The ASTER SDPS and the ASTER Gateway contain several software modules, at the communications (lowest) layer, which serve as library routines and are, collectively, referred to as the IK layer. At this writing, the IK library routines have already been developed/implemented for the V0 System]. Each of these messages is described, in detail, in the sections which follow.

6.2.2.1 Directory Search Request/Results

The purpose of the directory search is to aid the user in making an initial determination of the potential usefulness of various data sets pertinent to some application by searching through descriptions of metadata or data set catalogues which contain high-level information. The directory search provides information on the location of metadata or data set catalogues. The search criteria, specified by the user, are based on the following typical searchable attributes: source, sensor, geophysical parameter, dataset name, data center id, geographical coordinates (area), temporal intervals, etc. An ASTER user, requesting ECS services, submits the directory search request via the ASTER SDPS. The ASTER SDPS sends the request to the ASTER Gateway.

The Directory Search Request and Directory Search Results messages are implemented using ODL---their ODL Normalization Forms are defined in the immediately-following sections.

6.2.2.1.1 ODL Normalization Form for Directory Search Request

```
DIRECTORY_SEARCH group ::==
     MESSAGE_ID
     [AUTHENTICATOR]
     [ECS_AUTHENTICATOR]
     [CAMPAIGN]
     [DATASET_ID]
     [PARAMETER]
     [SENSOR_NAME]
     [SOURCE_NAME]
     [START_DATE]
     [STOP_DATE]
     [RANGE_LOC group]
     MONITOR group
     VERSION group

MONITOR group ::==
     TX_CLIENT
     RX_SERVER]
     [TX_SERVER]
     [RX_CLIENT]

RANGE_LOC group ::==
     NORTH_LATITUDE
     SOUTH_LATITUDE
     EAST_LONGITUDE
     WEST_LONGITUDE

VERSION group ::==
     PROTOCOL_VERSION
     SENDER_VERSION
     [IMS_STAFF]
```

6.2.2.1.2 ODL Normalization Form for Directory Search Result

```
DIRECTORY_RESULT group ::==
     MESSAGE_ID
     DATA_CENTER_ID
     STATUS_CODE
     [STATUS_CODE_COMMENT]
     (DATASET group)+
     NUMBER_OF_DATASETS
     MONITOR group
     VERSION group

DATASET group ::==
     DATASET_ID
          [DATA_SET_CONTACT group]
         DESCRIPTION
         (SOURCE_NAME)*
         (SENSOR_NAME)*
         (DISCIPLINE)+
         (TOPIC)+
         (TERM)+
         (VARIABLE)+
         [START_DATE]
```

```
        [STOP_DATE]
        [SPATIAL_COVERAGE group]

        DATA_SET_CONTACT group ::==
            DATA_CENTER_LONGNAME
            [DATA_CENTER_URL]
            [FIRST_NAME]
            [MIDDLE_INITIAL]
            [LAST_NAME]
            PHONE
            [FAX]
            EMAIL
            ADDRESS

        SPATIAL_COVERAGE group ::==
            EASTBOUNDINGCOORDINATE
            WESTBOUNDINGCOORDINATE
            NORTHBOUNDINGCOORDINATE
            SOUTHBOUNDINGCOORDINATE
              //Deleted due to change in ECS data model.

MONITOR group
    TX_CLIENT
    RX_SERVER
    TX_SERVER
    [RX_CLIENT]

VERSION group ::==
    PROTOCOL_VERSION
    SENDER_VERSION
    [IMS_STAFF]
```

6.2.2.2 Inventory Search Request/Results and Acknowledgment

The purpose of the inventory search is to aid a user in searching through the available inventory, locating and retrieving metadata about specific granules of the product(s) of interest, and determining whether any granules should be ordered; and also to allow a user to find datasets if the user chooses not to use a directory or guide search first. The search criteria, specified by the user, are based on the following searchable attributes: source, sensor, geophysical parameter, dataset name, data center id, geographical coordinates (area), temporal intervals, etc. An ASTER GDS user, requesting ECS services, submits the inventory search request via the ASTER SDPS Client. The ASTER SDPS Client sends the ASTER Gateway inventory search criteria based on characteristics of the data. The ASTER Gateway retrieves the requested granules' metadata, and sends these items back to the ASTER GDS IMS in chunks (maximum). The ASTER SDPS returns a separate acknowledge message to the ASTER Gateway upon receiving each chunk (the "chunking protocol" is described in section 6.2.1.3.)

The Inventory Search Request and Inventory Search Results messages are implemented using ODL---their ODL Normalization Forms are defined in the immediately-following sections. [A discussion of the ODL standardized conventions is provided as reference in Section 6.2. Detailed definitions of the message keywords (e.g., MESSAGE_ID) are provided in Appendix B].

In order to accommodate two-way mapping of terminology between ECS and the ASTER SDPS, the ASTER Gateway maintains a Sybase database containing the terminology mapping information. The ASTER Gateway database is built by a Gateway Administrator using ASTER

Gateway search parameters, ECS schema and metadata. Specifically, upon receiving a request from the ASTER SDPS Client the ASTER Gateway performs a ASTER-ECS mapping table look-up within the ASTER Gateway database, converting the ASTER request into ECS's terminology in order to accommodate ECS Similarly, results returned from ECS to the ASTER Gateway are converted, via the ASTER-ECS mapping service, to ASTER terminology prior to returning these results to the ASTER SDPS Client The ASTER Gateway-to-Sybase mapping interfaces are completely documented in #305-CD-023-002, Release B SDPS Data Management Subsystem Design Specification for the ECS Project.

6.2.2.2.1 ODL Normalization Form for Inventory Search Request

The ODL Normalization Form for the ASTER SDPS Client-to-ASTER Gateway Inventory Search Request message is equivalent to that defined in Section 6.2.1.2.1. with the following exceptions: Searches are not permitted for XAR_ID and CLOUD_COVERAGE, even though some ECS data sets may contain that information.

6.2.2.2.2 ODL Normalization Form for Inventory Search Results

The ODL Normalization Form for the ASTER Gateway-to-ASTER SDPS Client Inventory Search Results message is equivalent to that defined in Section 6.2.1.2.2.

6.2.2.2.3 ODL Normalization Form for Acknowledge

The ODL Normalization Form for the ASTER SDPS Client-to-ASTER Gateway Acknowledge message is equivalent to that defined in Section 6.2.1.2.3.

6.2.2.3 Browse Request/Results

The purpose of the Browse service is to allow the user to request and receive "representative" images for viewing and for analysis prior to deciding on specific full-resolution products to order.

The Integrated Browse service allows the user to view the browse product through the ASTER SDPS Client. In response to an integrated browse request (BROWSE_TYPE = Y) sent by the ASTER SDPS Client, via the ASTER Gateway, to the ECS Science Data Server, the ECS Science Data Server sends back to the ASTER SDPS Client (via the ASTER Gateway) the integrated browse results message, followed by the browse image, which is then displayed to the user.

All Browse image formats are provided in the Hierarchical Data Format (EOS-HDF) from the National Super Computing Applications (NCSA).

The Browse Request/Results messages are implemented using ODL---their ODL Normalization Forms are defined in the immediately-following sections. Detailed definitions of the message keywords (e.g., MESSAGE_ID) are provided in Appendix B.

The ASTER SDPS Client can display the image layers of the ECS browse data files written in HDF-EOS format. This will help the ASTER user to visualize ECS browse images during the

selection of data and to verify that the data received is the data desired. It is important to point out that the ASTER SDPS Client is not capable of reading text, table or movie loop documents. The ASTER SDPS Client can also save a browse file in a user-selectable directory for viewing with other viewers such as EOSView.

6.2.2.3.1 ODL Normalization Form for Browse Request

The ODL Normalization Form for the ASTER SDPS Client-to-ASTER Gateway Browse Request message is equivalent to that defined in Section 6.2.1.3.1.

6.2.2.3.2 ODL Normalization Form for Integrated Browse Results

The ODL Normalization Form for the ASTER Gateway-to-ASTER SDPS Client Integrated Browse Results message is equivalent to that defined in Section 6.2.1.3.2.

6.2.2.4 Product Request/Result

The Product Request allows the user to order ECS data products through the ASTER SDPS. After the user has successfully searched, located, and viewed the inventory data for the data sets and selected the granules desired; and (possibly) after the user has viewed certain "representative" browse images, the user may (but is not required to) submit a product request. The Product Request is sent from the ASTER SDPS Client to the ASTER Gateway. The Product Result is sent from the ASTER Gateway to the ASTER SDPS Client. The Product Result provides a confirmation of ECS receipt of the Product Request and provides contact information for further inquiries. The actual product is distributed by ECS via physical media

6.2.2.4.1 ODL Normalization Form for Product Request

The ODL Normalization Form for the ASTER SDPS-to-ASTER Gateway are equivalent to those in Section 6.2.1.4.1.

6.2.2.4.2 ODL Normalization Form for Product Result

The ODL Normalization Form for the ASTER Gateway-to-ASTER SDPS Client are equivalent to those in Section 6.2.1.4.2.

6.2.2.5 Quit

During any given session, problems may necessitate premature termination of the process. In such cases, a bi-directional quit message is transmitted between the ASTER Gateway and the ASTER SDPS Client, as appropriate. Specifically, the ASTER SDPS Client sends a quit message to the ASTER Gateway if the user presses the "abort" button on the screen. On the other hand, the quit message is sent by the ASTER Gateway to the ASTER SDPS Client if an error condition terminates the response. Quit messages are also used to synchronize the ASTER SDPS Client with the ECS Science Data Server following the last chunk in an inventory result---the ECS Science Data Server sends a QUIT with a STATUS_CODE of 1, via the ASTER Gateway, to the ASTER SDPS Client and the ASTER SDPS Client sends a similar QUIT back to the ECS Science Data Server, via the ASTER Gateway.

6.2.2.5.1 ODL Normalization Form for Quit

The ODL Normalization Form for the ASTER SDPS-to-ASTER Gateway are equivalent to those in Section 6.2.1.5.1.

6.2.2.6 Product Cancel Request/Result

The operations concept for canceling a request is to first ask for status and obtain the top-level request ID and then each sub-request ID. Given this, the user can attempt to cancel the entire order or an individual request within an order. Therefore, the following message can be used to cancel an order or a sub-request within that order.

6.2.2.6.1 ODL Normalization Form for Product Cancel Request

The ODL Normalization Form for the ASTER SDPS-to-ASTER Gateway are equivalent to those in Section 6.2.1.6.1.

6.2.2.6.2 ODL Normalization Form for Product Cancel Result

The ODL Normalization Form for the ASTER SDPS-to-ASTER Gateway are equivalent to those in Section 6.2.1.6.2.

6.2.2.7 Product Status Request/Information

6.2.2.7.1 ODL Normalization Form for Product Status Request

The ODL Normalization Form for the ASTER SDPS-to-ASTER Gateway are equivalent to those in Section 6.2.1.7.1.

6.2.2.7.2 ODL Normalization Form for Product Status Information

The ODL Normalization Form for the ASTER SDPS-to-ASTER Gateway are equivalent to those in Section 6.2.1.7.2.

6.2.2.8 Price Estimate Request/Result

6.2.2.8.1 ODL Normalization Form for Price Estimate Request

The ODL Normalization Form for the ASTER SDPS-to-ASTER Gateway are equivalent to those in Section 6.2.1.8.1.

6.2.2.8.2 ODL Normalization Form for Price Estimate Results

The ODL Normalization Form for the ASTER SDPS-to-ASTER Gateway are equivalent to those in Section 6.2.1.8.2.

6.2.2.9 Product Update Request/Result

6.2.2.9.1 ODL Normalization Form for Product Update Request/Result

The ODL Normalization Form for the ASTER SDPS-to-ASTER Gateway are equivalent to those in Section 6.2.1.9.1.

6.3 Data Acquisition Requests (DARs)

6.3.1 DAR Data Base Information

(Refer to Appendix C: DAR Client Application Programming Interface)

6.3.2 Data Acquisition Request Input Parameters

The DAR input parameters provided by the ASTER GDS specify the required conditions and instrument configuration(s) for filling a user's request for data acquisition(s) by the ASTER instrument. The DAR Input Parameters List is the mechanism by which the ASTER science team conveys its DAR submission preferences to the ASTER GDS API developers. Once the DAR input parameters contained in the API data structure associated with the submitDar call is in agreement with the DAR Input Parameters List, the DAR Input Parameters List will no longer be needed. This is because the content of the DAR Input Parameters List will be fully contained within the API and the API software will be coded solely in accordance with the final API. This information is provided to the ASTER GDS DAR Client application by the ECS Client via the submitDar call contained in the ASTER GDS API. The ASTER GDS DAR Client application validates the DAR input parameters against an internal data base of valid DAR input values. If the DAR parameters are valid, the ASTER DAR Client application submits the user's DAR to the ASTER GDS SDPS.

Upon submittal to the ASTER GDS SDPS, the DAR Client application obtains a confirmation that the DAR was received by the ASTER GDS. The ASTER GDS DAR Client application returns this confirmation and the assigned DAR ID and DAR request version number to the ECS SDPS Client.

6.3.3 DAR Submit/Results

A user request regarding observations by use of the ASTER instrument will be submitted via the ECS Client software. Subsequently, a registration request of the user request will be issued to the ASTER GDS. DAR parameters will be specified either by the user or the DAR Client software in accordance with the submitDAR call defined in Appendix C. DAR registration information will be sent via the DAR Gateway API and the DAR server in the GDS-IMS, stored in the XAR DB of the GDS-AOS, and used in a scheduling process of the ASTER Instrument operations.

If the DAR submittal is properly accomplished, a XAR ID will be sent back to the user. If the DAR submittal is not properly accomplished, an error message will be sent back to the user.

6.3.4 XAR Modify Request/Results

A modification request regarding a DAR of the ASTER instrument will be submitted to the ASTER-GDS via the ECS Client software. DAR parameters to be modified will be specified by the user in accordance with the data structure associated with the modifyDar call defined in Appendix C. Information on the DAR changes will be sent via the DAR Gateway API and the DAR server in the GDS-IMS, stored in the XAR DB of the GDS-AOS, and used in a scheduling process of the ASTER instrument operations.

After the DAR modifications have been stored, the revised status information will be sent back to the user.

6.3.5 XAR Query

The ECS Client software has the ability to send queries to ASTER-GDS via the DAR Gateway API. The ASTER-GDS software, in turn, transmits ECS queries to the ASTER-AOS database. The ASTER-AOS database searches the database in accordance with the ECS search criteria and creates a response that is returned to the ASTER-GDS software, whereupon it is returned to the ECS Client software via the DAR Gateway API. The DAR Gateway API supports four API calls for queries via the gateway:

a. XAR status

b. Sub-XAR status

c. XAR Contents

Each of these query types are discussed in the following subparagraphs.

6.3.5.1 XAR Status Search Request/Results

XAR Status Search Request regarding observations by use of the ASTER instrument will be submitted via the ECS Client software. Subsequently, a search request will be issued to the ASTER GDS. The XAR search request will be submitted to the DAR server in the GDS-IMS via the DAR Gateway API. The DAR server will retrieve the inventory information of the XAR DB in the GDS-AOS, and send the retrieval results to ECS.

If the XAR Status Search is properly accomplished, the requested XAR status information will be sent back to ECS. If the XAR Status Search is not properly accomplished, an error message will be sent back to ECS.

6.3.5.2 Sub-XAR Status Search Request/Results

The Status Search Request regarding observations by use of the ASTER Instrument will be submitted via the ECS Client software. Subsequently, a search request will be issued to the ASTER GDS. The Sub-XAR search request will be submitted to the DAR server in the GDS-IMS via the DAR Gateway API. The DAR server will retrieve the inventory information of the XAR DB in the GDS-AOS, and send the retrieval results to ECS.

If the Sub-XAR Status Search is properly accomplished, the requested Sub-XAR status information will be sent back to ECS. If the Sub-XAR Status Search is not properly accomplished, an error message will be sent back to ECS.

6.3.5.3 XAR Contents Requests/Results

The XAR Contents Request regarding observations by use of the ASTER Instrument will be submitted to the ASTER GDS via the ECS Client software. The XAR Content Request will be submitted to the DAR server in the GDS-IMS via the DAR Gateway API. The DAR server will retrieve the inventory information of the XAR DB in the GDS-AOS, fetch the requested XAR contents, and send the retrieval results to ECS.

If the XAR Content Request is properly accomplished, the requested XAR contents will be sent back to the user. If the XAR Content Request is not properly accomplished, an error message will be sent back to the user. The XAR Contents Request allows a user to get information on a single XAR.

6.4 Data Products Delivered Via Physical Media

Data products will be delivered by ASTER GDS to ECS via physical media transfer. Details of the data exchange framework, including media specifications, bar coding standards, and Physical Media PDR's are described in Sections 4.6.4.

6.4.1 ASTER Level 1A and 1B Products

The complete list of files that will be included in Level 1A and Level 1B delivery to ECS are identified in section 4.6.3.1 and 4.6.3.2, respectively. The ASTER Level 1A products that are delivered to the EDC DAAC will be in HDF-EOS format. Details of the ASTER Level 1A product format is specified in the ASTER Level 1 Data Products Specification (ASTER GDS Version), which is Appendix D to this document. Browse of Level 1B Product shall not be created.

6.4.1.1 Browse Data Handling at DADS

For D3 tape, which will be delivered to ECS, a requested granule shall be checked to see if the associated Browse file exists. If yes, both the granule and the Browse file shall be stored to the tape. If not, only the product data shall be stored.

6.4.1.2 Handling of Metadata

L1B Browse ID is assigned to L1A Product Metadata entry, which represents Browse ID. Likewise, L1 Browse ID is also assigned to L1B Product Metadata entry, which represents Browse ID.

L1A Product ID is assigned to Browse Metadata entry, which represents the mother product.

6.4.2 Data Shipping Notice

The Data Shipping Notice serves as a routine notice from the ASTER GDS to the ECS DAAC Operations Supervisor at EDC that a shipment of level 1 tapes is being put into the mail. This Data Shipping Notice will identify granule-level information for the level 1 scenes being shipped. This will provide the DAAC with several days advance notice of the arrival of these level 1 granules.

The ASTER GDS will send the Data Shipping Notices via e-mail, (over Ebnet) to the ECS DAAC Operations Supervisor at EDC. The structure of the Data Shipping Notice is shown in Section 4.6.3.8, Figure 4-8, and the format of the Data Shipping Notice is shown in section 4.6.3.8, Table 4-3.

6.4.3 ECS Standard Data Products

ECS standard data products are in HDF-EOS format. The physical media for delivery is selected by the ASTER GDS from a listing of physical media options at the time the product order is placed (refer to Section 4.6 for more information on physical media options).

6.5 Science Software Development and Delivery

6.5.1 ASTER GDS Science Software

By agreement between ESDIS and ERSDAC, the ASTER Level 1a and Level 1b science software will be developed using (at a minimum) the mandatory portions of the ECS Science Data Production (SDP) toolkit. NASA will provide the ECS SDP Toolkit (and updates) to the ASTER GDS.

Science Data Production Software Delivery Packages and Calibration Coefficient Update Packages for ASTER Level 1a and Level 1b science software are delivered by the ASTER GDS SDPS to the ECS SDPS at the EDC DAAC. ASTER science software delivery to the ECS SDPS will be via media delivery (8 mm. tape, 4 mm. tape, CD-ROM).

The details of the science software interfaces for Science Data Production Software Delivery Packages and Calibration Coefficient updates are defined in the sections of the ICD Between ECS and Science Computing Facilities, as noted below:

a. Section 4.6 ECS Ingest Requirements (for Science Software and Calibration Coefficient Delivery)

b. Section 5.1 ECS Software Package External interfaces (for SDP Toolkit Delivery from ECS)

c. Section 5.3.1 Interactive Session Dialog

d. Section 5.4.2 Data Production Software Delivery Package via Media to GSFC

e. Section 5.7 Results of Testing interfaces (Interface Method for Test Products should be Password-protected ftp or Media)

f. Section 5.13.4 Coefficients and SCF-Generated Ancillary Data Update Package Media Ingest.

6.5.2 ECS Science Software for ASTER Standard Products

By agreement between ESDIS and ERSDAC, the ASTER SDPS may submit a request to the ECS SDPS to obtain Data Production Software Delivery Packages for U.S. ASTER science software for higher level standard products. The requested Data Production Software Delivery Packages will be delivered to the ASTER GDS SDPS via physical media.

6.6 Valids Exchange

Valids are exchanged between ECS and ASTER GDS via e-mail. Information about valids formats and definitions are provided below.

In the paragraphs below, groups within the [ ] are optional. Values that are repeated within a category are separated by commas. The notes within the < > are just for descriptive purposes. If multiple values are not shown, then a single value is assumed.

A SINGLE_VALUE is of the form: "}some string with double quote marks preceded by \"}
A MULTIPLE_VALUE_LIST is of the form: (SINGLE_VALUE[, SINGLE_VALUE, …}])

6.6.1 Format for ASTER GDS Valids for ECS

The following describes the valids file format that ASTER GDS creates and sends to ECS. This file contains the information ECS uses for both Data Dictionary valids and directory information. ECS will parse this one file and internally use its components in the Advertising Service and the Data Dictionary as needed.

```
GROUP = VALIDS
     DATA_CENTER_ID = "<data_center_id>"
     GROUP = DATASET
          [CAMPAIGN = " MULTIPLE_VALUE_LIST]"
          DATASET_ID = " SINGLE_VALUE"
          SOURCE = "  MULTIPLE_VALUE_LIST"
          SENSOR = "  MULTIPLE_VALUE_LIST"
          [PARAMETER = " MULTIPLE_VALUE"]  //At ASTER GDS request.
          PROCESSING_LEVEL = "SINGLE_VALUE"  Note: must be one of [0, 1A, 1B, 2, 3, 4]
          [DAY_NIGHT_FLAG = " MULTIPLE_VALUE_LIST"]
          GROUP = DATASET_COVERAGE
              SPATIAL = " SINGLE_VALUE"
              TEMPORAL = "<MM/DD/YYYY - MM/DD/YYYY | present"
          END_GROUP = DATASET_COVERAGE
          [GROUP = GRANULE_COVERAGE
              SPATIAL = " SINGLE_VALUE"
              TEMPORAL = "SINGLE_VALUE"
          END_GROUP = GRANULE_COVERAGE]
          [GROUP = DEPENDENCY
                 [SENSOR = "MULTIPLE_VALUE_LIST"]
                 [SOURCE = "MULTIPLE_VALUE_LIST"]
                 [PARAMETER = "MULTIPLE_VALUE_LIST"]
          END_GROUP  = DEPENDENCY]*  // 0 or more
          GROUP = DIRECTORY_PARAMETERS
              DESCRIPTION = "<long description, quotes must be preceded by \>"
              DATASET_SHORT_NAME = "<short name for DATASET_ID>"
```

```
            DISCIPLINE= “MULTIPLE_VALUE_LIST”
            TOPIC= “MULTIPLE_VALUE_LIST”
            TERM= “MULTIPLE_VALUE_LIST”
            VARIABLE= “MULTIPLE_VALUE_LIST”
            [GROUP = SPATIAL_COVERAGE
                 EASTBOUNDINGCOORDINATE=”<float between -180 - +180>”
                 WESTBOUNDINGCOORDINATE=”<float between -180 - +180>”
                 NORTHBOUNDINGCOORDINATE=”<float between -90 - +90>”
                 SOUTHBOUNDINGCOORDINATE=”<float between -90 - +90>”
                 [MINIMUM_ALTITUDE=”<float>”]
                 [MAXIMUM_ALTITUDE=”<float>”]
                 [MINIMUM_DEPTH=”<float>”]
                 [MAXIMUM_DEPTH=”<float>”]
            END_GROUP = SPATIAL_COVERAGE]
            GROUP = DATA_SET_CONTACT
                 DATA_CENTER_LONGNAME=”<long name of DATA_CENTER>”
                 [DATA_CENTER_URL=”<URL to home page of data center>”]
                 [FIRST_NAME=”<first name of contact person>”]
                 [MIDDLE_NAME=”<middle name of contact person>”]
                 [LAST_NAME=”<last name of contact person>”]
                PHONE=”<phone number of site>”
                 [FAX = “<FAX number at site>”]
                 EMAIL=”<e-mail of contact person>”
                 ADDRESS=”<free text including address>”
            END_GROUP = DATA_SET_CONTACT
        END_GROUP = DIRECTORY_PARAMETERS
        GROUP = SERVICES
            GROUP = BROWSE
                FTP=”no”
                INTEGRATED=”yes”
            END_GROUP = BROWSE

GROUP = PGR
       PRODUCT_TYPE = “<product>”
       SENSOR_TYPE = “<sensor_type>”
       RESOURCE_PRODUCT = “<resource_product>”
       [PGR_COMMENT = “<description of PGR service>”]
       PGR_SPEC_NUMBER = <number of parameters>
       GROUP = PGR_SPEC
              PGR_CODE = “<name of parameter>”
              PGR_TYPE = “<data type = REAL, INTEGER, or STRING>”
              [PGR_SPEC_COMMENT = “comment about parameter”]
              RESTRICTION_NUMBER = <number of restrictions>
              GROUP = RESTRICTION
                     [PGR_LIST = (…)]     /* needed if selection list can  be specified */
                     [PGR_MINVALUE = <minimum value>]  /* needed for  range parameters */
                     [PGR_MAXVALUE = <maximum value>]  /* needed for  range parameters */
                     [GROUP = DEPENDENCY_CONSTRAINT   /* other parameter  as constraint */
                            DEPENDENT_PGR_CODE = “<name of other  parameter>”
                            DEPENDENT_OPERAND = < | <= | > | >= | = | !=
                     END_GROUP = DEPENDENCY_CONSTRAINT]
                     [GROUP = CONDITIONAL_CONSTRAINT  /* condition for  this restriction */
                            CONDITION_PGR_CODE = “<name of other  parameter>”
                            CONDITION_PGR_LIST = <list of values for  condition>
                     END_GROUP = CONDITIONAL_CONSTRAINT
              END_GROUP = RESTRICTION
              [PGR_DEFAULT = <default value>]  /* optional */
              [SELECT_NUM = ONE | MANY]  /* defines how many values  can be supplied */
              [REQUIRED = Y|N]  /* defines whether this is a required  field or not */
```

This example demonstrates the use of the dependency constraint.

```
GROUP = PGR
```

```
PRODUCT_TYPE = “2A02V”
SENSOR_TYPE = “V”
RESOURCE_PRODUCT = “1B00”
PGR_COMMENT = “This PGR will create product type 2A02V, blah,  blah, blah”
PGR_SPEC_NUMBER = 5
GROUP = PGR_SPEC
       PGR_CODE = “ProcessingBand”
       PGR_TYPE = “STRING”
       RESTRICTION_NUMBER = 1
       GROUP = RESTRICTION
              PGR_LIST = (“1,2,3N”)
              PGR_DEFAULT = “1,2,3N”
       END_GROUP = RESTRICTION
       SELECT_NUM = ONE
       REQUIRED = Y
GROUP = PGR_SPEC
       PGR_CODE = “ProcessingOption”
       PGR_TYPE = “STRING”
       RESTRICTION_NUMBER = 1
       GROUP = RESTRICTION
              PGR_LIST = (“COVARIANCE”, “CORRELATION”)
              PGR_DEFAULT = “CORRELATION”
       END_GROUP = RESTRICTION
       SELECT_NUM = ONE
       REQUIRED = Y
END_GROUP = PGR_SPEC
GROUP = PGR_SPEC
       PGR_CODE = “OutputStddev”
       PGR_TYPE = “INTEGER”
       RESTRICTION_NUMBER = 1
       GROUP = RESTRICTION
              PGR_MINVALUE = 0
              PGR_MAXVALUE = 255
              PGR_DEFAULT = 50
       END_GROUP = RESTRICTION
       SELECT_NUM = ONE
       REQUIRED = Y
END_GROUP = PGR_SPEC
GROUP = PGR_SPEC
       PGR_CODE = “OutputMean”
       PGR_TYPE = “INTEGER”
       RESTRICTION_NUMBER = 1
       GROUP = RESTRICTION
              PGR_MINVALUE = 0.0
              PGR_MAXVALUE = 255.0
              PGR_DEFAULT = 127.5
       END_GROUP = RESTRICTION
       SELECT_NUM = ONE
       REQUIRED = Y
END_GROUP = PGR_SPEC
GROUP = PGR_SPEC
       PGR_CODE = “StatisticsSkip”
       PGR_TYPE = “INTEGER”
       RESTRICTION_NUMBER = 1
       GROUP = RESTRICTION
              PGR_MINVALUE = 1
              PGR_MAXVALUE = 50
              PGR_DEFAULT = 3
       END_GROUP = RESTRICTION
       SELECT_NUM = ONE
       REQUIRED = Y
END_GROUP = PGR_SPEC
GROUP = PGR_SPEC
       PGR_CODE = “FIRST_START_LINE”
       PGR_TYPE = “INTEGER”
       RESTRICTION_NUMBER = 1
       GROUP = RESTRICTION
              PGR_MINVALUE = 0
              PGR_MAXVALUE = 4200
       END_GROUP = RESTRICTION
       SELECT_NUM = ONE
       REQUIRED = Y
END_GROUP = PGR_SPEC
GROUP = PGR_SPEC
       PGR_CODE = “LAST_START_LINE”
       PGR_TYPE = “INTEGER”
       RESTRICTION_NUMBER = 1
       GROUP = RESTRICTION
```

```
                PGR_MINVALUE = 0
                PGR_MAXVALUE = 4200
                GROUP = DEPENDENCY_CONSTRAINT
                        DEPENDENT_PGR_CODE = “FIRST_START_LINE”
                        DEPENDENT_OPERAND = “<”
                END_GROUP = DEPENDENCY_CONSTRAINT
          END_GROUP = RESTRICTION
          SELECT_NUM = ONE
          REQUIRED = Y
    END_GROUP = PGR_SPEC
          etc…….
```

Another example shows the DEM product with the conditional parameters.

```
    PRODUCT_TYPE = “DEM 4A01”
    SENSOR_TYPE = “V”
    RESOURCE_PRODUCT = “1A00”
    PGR_COMMENT = “This PGR will create product type 2A02V, blah,  blah, blah”
    PGR_SPEC_NUMBER = …
    GROUP = PGR_SPEC
          PGR_CODE = “MapProjection”
          PGR_TYPE = “STRING”
          RESTRICTION_NUMBER = 1
          GROUP = RESTRICTION
                PGR_LIST = (“UTM, “PS”, “LCC”, “LONLAT”)
                PGR_DEFAULT = “LONLAT”
          END_GROUP = RESTRICTION
          PGR_CODE = “OutputResolution”
          PGR_TYPE = “STRING”
          RESTRICTION_NUMBER = 2
          GROUP = RESTRICTION
                PGR_LIST = (15, 30, 90)
                PGR_DEFAULT = 15
                GROUP = CONDITIONAL_CONSTRAINT
                      CONDITION_PGR_CODE = “MapResolution”
                      CONDITION_PGR_LIST = (“UTM”, “PS”)
                END_GROUP = CONDITIONAL_CONSTRAINT
          END_GROUP = RESTRICTION
          GROUP = RESTRICTION
                PGR_MINVALUE = 0.5
                PGR_MAXVALUE = 3.0
                PGR_DEFAULT = 1.0
                GROUP = CONDITIONAL_CONSTRAINT
                      CONDITION_PGR_CODE = “MapResolution”
                      CONDITION_PGR_LIST = (“LONLAT”)
                END_GROUP = CONDITIONAL_CONSTRAINT
          END_GROUP = RESTRICTION
          etc.  ….

        GROUP = PRODUCT_REQUEST
            MEDIA_TYPE = “ MULTIPLE_VALUE_LIST”
            MEDIA_FORMAT = “ MULTIPLE_VALUE_LIST”
        END_GROUP = “PRODUCT_REQUEST”
    END_GROUP=“SERVICES”
  END_GROUP = DATASET
  /*  REPEAT DATASET group for each dataset available through the Gateway. */
END_GROUP = VALIDS
```

6.6.2 Format for ECS Valids for ASTER GDS

The following describes the valids file format that ECS creates and sends to the ASTER GDS. This file is identical to the valids file sent from ASTER GDS to ECS, with the exception that the DIRECTORY group is omitted.

```
GROUP = VALIDS
     DATA_CENTER_ID = “<data_center_id>”
     GROUP = DATASET
          [CAMPAIGN = “ MULTIPLE_VALUE_LIST]”
          DATASET_ID = “ SINGLE_VALUE”
          SOURCE = “  MULTIPLE_VALUE_LIST”
          SENSOR = “  MULTIPLE_VALUE_LIST”
          PARAMETER = “ MULTIPLE_VALUE”
          PROCESSING_LEVEL = “SINGLE_VALUE”                    Note: must be one
                                                               of [0, 1A, 1B, 2, 3, 4]
          [DAY_NIGHT_FLAG = “ MULTIPLE_VALUE_LIST”
          GROUP = DATASET_COVERAGE
              SPATIAL = “ SINGLE_VALUE”
              TEMPORAL = “<MM/DD/YYYY - MM/DD/YYYY | present”
          END_GROUP = DATASET_COVERAGE
          [GROUP = GRANULE_COVERAGE
              SPATIAL = “ SINGLE_VALUE”
              TEMPORAL = “SINGLE_VALUE”
          END_GROUP = GRANULE_COVERAGE]
          [GROUP = DEPENDENCY

                 [SENSOR = “MULTIPLE_VALUE_LIST”]
                 [SOURCE = “MULTIPLE_VALUE_LIST”]
                 [PARAMETER = “MULTIPLE_VALUE_LIST”]

          END_GROUP  = DEPENDENCY]*  // 0 or more
          GROUP = SERVICES
              GROUP = BROWSE
                  FTP=”no”
                  INTEGRATED=”yes”
              END_GROUP = BROWSE
              [GROUP = PGR
                   PRODUCT_TYPE= "SINGLE_VALUE"
                   SENSOR_TYPE= "MULTIPLE_VALUE_LIST"
                   RESOUCE_PRODUCT = "SINGLE or  MULTIPLE_VALUE"
                  PGR_SPEC_NUMBER
                  {GROUP = PGR_SPEC
                       PGR_CODE = "SINGLE_VALUE"
                      PGR_TYPE = 0 or 1
                       PGR_COMMENT = "SINGLE_VALUE"
                       PGR_LIST = "MULTIPLE_VALUE_LIST"
                       PGR_MAXVALUE = "SINGLE_VALUE"
                       PGR_MINVALUE = "SINGLE_VALUE"
                  END_GROUP = PGR_SPEC}+  // 1 or more
              END_GROUP = PGR]*  // 0 or more
     END_GROUP = DATASET
     /*  REPEAT DATASET group for each dataset available through the Gateway. */
END_GROUP = VALIDS
```

6.7 Guide and Guide Searches

The interface for Guide is unidirectional, from ASTER GDS to ECS. GDS Guide for ASTER will be delivered by the ASTER GDS to the ECS on D3 Tape media. ECS will ingest the GDS Guide and make the documents available as part of the ECS Guide holdings. GDS users will have access to ECS Guide and ECS Guide search capabilities via the internet and http. ECS users will also utilize the ECS Guide for access to the ASTER GDS documents ingested into the ECS. Figure 6-5 provides an example of archive.odl File Documenting Server Address and WAIS Protocol for Connecting to a ASTER Guide Server.

```
/* $Id: archive.odl,v 4.3.4.1 1995/08/02 17:08:26 ims Exp $ */

/* OPERATIONAL/STABLE/DEMO archive information */

GROUP            = DATA_CENTER_INFO

  GROUP      = DATA_CENTER
    DATA_CENTER_ID         = "ASF"
    DATA_CENTER_NAME    = "ALASKA SAR FACILITY"
     INTERNET           = "eosims.asf.alaska.edu"
     PORT               = "12325"
     GUIDE_SRV_ADDR     =
"wais://eosims.asf.alaska.edu:12365/ASF_guide"
  END_GROUP   = DATA_CENTER
                                        o
                                        o
```

Figure 6-5. Example of archive.odl File Documenting Server Address and WAIS Protocol for Connecting to a ASTER Guide Server

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7. Interfaces Between the ECS CSMS and the ASTER GDS AOS

7.1 General

This section describes the interfaces between ECS and the ASTER GDS that will be implemented through use of the ECS bulletin board services. Access to ECS Bulletin Board services are available through EBnet connections.

7.2 Long Term Plans

The ASTER GDS access to the EOS Long Term Science Plan (LTSP), Long Term Instrument Plan (LTIP), and the Long Term Spacecraft Operations Plan will be accomplished through EBnet access via ECS bulletin board services. Specified ASTER AOT and IOT addressees will be included in the access group(s) which have access to these messages.

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8. Interfaces Between the ECS CSMS and the ASTER GDS GSMS/IMS

8.1 General

This section describes the system status exchange interfaces between ECS and the ASTER GDS. Communications between ECS CSMS and the ASTER GDS CSMS Ground System Management System (GSMS) will be by e-mail. Exchanged information is system running status information and maintenance scheduling information. This information will be formatted for automated import to and export from the Remedy Action Request System (ARS) on the ECS side and a custom problem tracking system on the Aster GDS side. The interface (ECS CSMS or ASTER GDS CSMS GSMS) whose system running status changes, will send its information to the other interface.

8.2 ECS System Management Data

ECS and ASTER GDS are responsible for exchanging system management information and event notifications. The information will be in a shared schema which allows incorporation into the respective trouble ticketing system.

ASTER GDS shall notify ECS of all scheduled maintenance activities affecting ECS sites nominally 5 days in advance. ASTER GDS shall notify all affected ECS sites directly and will also provide notification to the SMC. The notice will be sent to the SMC where it will be forwarded to affected ECS sites. The notification will provide an estimated time of restoration.

8.3 Detailed Description of the System Management Data

The format for management information notification is via SMTP electronic mail (email) and will be formatted in a machine-parsable form. The template for ECS-ASTER GDS event notification is illustrated in Figure 8-1. This template is also used for notification of maintenance activities. Table 8-1 shows ECS-ASTER GDS Event Notification Message Fields. Table 8-2 shows the mapping between site names and site IDs used in the schema. The Affected Service Identification Table is shown in Table 8-3, and Figure 8-2 contains the GDS_Header, which will be required in transmitting the ECS-ASTER GDS Event Notification Message via e-mail.

The following figure and table show the template for ECS-ASTER GDS Event Notifications, the schema for the template and the associated fields.

```
# Transfer Schema E-mail Template
Schema: Trouble-Ticket-Xfer

Status  !536870912!:
EventDescription !536870913!:
StatusLog !536870919!:
Activity          !536870918!:
SourceCreateDate !536870916!:
SourceCloseDate !536870920!:
SourceTicketId !536870914!:
AffectedSites !536870917!:
SourceSiteId !536870921!:
ContactInformation !536870915!:
DestinationSiteId !536870922!:




Note: A blank line must follow the Schema field.
```

Figure 8-1. ECS-ASTER GDS Event Notification Message Format

Table 8-1. ECS-ASTER GDS Event Notification Message Schema Fields (1 of 2)

Field	Field ID	Data Type	Size	Values	Definition
Status	536870912	Selection	4	Open, Closed, Tracking, Information, Rejected	Current status of trouble ticket in its source system. Note, Aster only issues the Open and the Closed status values when sending to ECS. ECS supports all 5 status values. Reason for a status of Rejected can be found in the StatusLog field.
EventDescription	536870913	Character	255		This field contains a short description of the problem. For messages sent by Aster GDS, the field is formatted with “Segment, Subsystem, Service, trouble/maintenance, Explanation”. See Table 8-3 for a list of valid service Ids. For messages sent by ECS, the field is completely free form.
SourceTicketId	536870914	Character	15		Trouble ticket id from ticket's source system.
ContactInformation	536870915	Character	255		Name, phone, fax, etc. of responsible person(s) at source site.
SourceCreateDate	536870916	Date/Time	4		Timestamp when ticket was created in source system. GMT
AffectedSites	536870917	Character	255	See table below for current list of supported sites.	Space separated list of site ids for sites affected by event. Note, the sending site may but is not obligated to fill in this field since the receiving site agrees to forward the ticket to affected sites.
Activity	536870918	Character	25		If an outage is determined to be from a planned outage the ticket will be marked as such, otherwise it will be marked unplanned. This field is *NOT* used for scheduling future planned outages.
StatusLog	536870919	Diary	Unlimited		For messages sent by ECS, this field shall contain all diagnostic notes and any other information deemed important to the destination site. All related external trouble tickets received against this problem will be included here and marked "\nEOSXID: SourceTicketNumber\n". The reason for rejecting a messages is included here as well.
SourceCloseDate	536870920	Date/Time	4		Timestamp of when source system closed their ticket. GMT.
SourceSiteId	536870921	Character	30	See table below for current list of supported sites.	Site id of site that sent you this ticket. See Table 8-2 for list of site Ids.

Table 8-1. ECS-ASTER GDS Event Notification Message Schema Fields (2 of 2)

Field	Field ID	Data Type	Size	Values	Definition
DestinationSiteId	536870922	Character	30	See table below for current list of supported sites.	Site id of site that you intend to receive this ticket. See Table 8-2 for list of site Ids.

Table 8-2. Domain Site to Domain ID Mapping

Domain Sites	Domain IDs
ASTER GDS	AGD
SMC	SMC
EOC	EOC
GSFC	GSF
LaRC	LAR
EDC	EDC
NSIDC	NSC
JPL	JPL
ASF	ASF
ORNL	ORN
ECS EDF	EDF
EDOS	EDO
EBnet	EBN
NSI	NSI

CH01

Table 8-3. Affected Service Identification Table

Service Description	Affected Service ID
Aster Data Network	ADN
Aster Operation Segment	AOS
Data Acquisition and Data Storage (Aster)	DADS
Ground System Management System (Aster)	GSMS
Information Management System (Aster)	IMS
Product Generation System (Aster)	PGS
SISS (Aster)	SISS
ECS Aster Gateway	ASGATE
ECS Ingest Server	INGEST
ECS Science Data Server	SDSRV
ECS Document Data Server	DDSRV
ECS Data Distribution Server	DDIST
ECS Order Tracking Server	ORDTRK
ECS DAR Tool	DAR
ECS LIM/DIM	IMSRV
ECS Advertising Server	ADVSRV

Note, the list of services offered at ASG is incomplete.

```
E-mail Contents Header
BEGIN_OBJECT=GDS_Header;          /* Message Sequential Number  0 ~ 999999999(dec) */
Message_Number=123456789;         /* Re-entarant Check Flag  "Yes", "No" */
ReEntrantCheck=Yes;               /* Sender ID  ECS, GDS */
Sender_ID=GDS;                    /* Receiver ID  ECS, GDS */
Receiver_ID=ECS                   /* Operation Mode  "Operation", "Test" */
Mode=Operation;                   /* Data Sequential Number  0~999999999(dec) */
Data_Number=0;                    /* End-data Flag  "E" or "" */
EndData_Flag=E;                   /* User ID */
Send_Date=1998-08-01;             /* Send Date  yyyy-mm-dd */
Send_Time=06:56:12.056;           /* Send Time  hh:mm:ss.msc */
END_OBJECT=GDS_Header;
/* End of GDS Header */
BEGIN_OBJECT=DATA
/*  Data Descriptin Area */
END_OBJECT=DATA
```

No.	Key	Contents	Value
1	Message_Number	Message serial number in seder segment. A series of Interface sequence is set same number.	"000000000" ~"999999999"(dec) Values are used cyclically.
2	ReEntrantCheck	If this flag is "Yes", same " Message_Number" message can be skipped in Receiver.	"Yes": Check "No": No Check
3	Sender_ID	Identifier of Sender's Segment/Subsystem.	ECS, GDS
4	Receiver_ID	Identifier of Receiver's Segment/Subsystem	Same as Sender_ID
5	Mode	Identifier of Operation Mode / Test Mode.	"Operation" or "Test"
6	Data_Number	Serial Number in the case there are plural data.	"000000000" ~"999999999" (dec)
7	EndData_Flag	Identifier of End data in the case there are plural data.	ASCII Blank (20hex): all data except end one "E": Last data (including in the case of there is only 1 data)
8	Send_Date	Date to send message. Display with yyyy-mm-dd. Use **GMT**. yyyy: Year mm: Month dd: Day	yyyy:0000~9999 mm:01~12 dd:01~28,29,30,31
9	Send_Time	Time to send message. Display with hh:mm:ss.msc. Use **GMT**. hh: Hour (24hour system) mm: Minute ss: Second msc: Milli Second	hh:00~23 mm:00~59 ss:00~59 msc:000~999 Use MSCif necessary. Set 000 if not necessary.

Figure 8-2. Standard E-mail GDS Header

DAR User Profile Mail Format

****
First Name:
Middle Initial:
Last Name:
E-mail:
Telephone:
Fax:
Postal Code:
Address:
City:
State:
Country:

User ID:
DAR User Category:
Affiliation:
****
First Name:
Middle Initial:
Last Name:
E-mail:
Telephone:
Fax:
Postal Code:
Address:
City:
State:
Country:
User ID:
DAR User Category:
Affiliation:
****

-
-
-

Example:

****
First Name: William
Middle Name: J
Last Name:Clinton
e-mail:president@whitehouse.gov
Telephone:1-202-456-1414
Fax:1-202-456-1415
Postal Code:20500
Country:U.S.A.
State:D.C.
City:Washington
Address:The White House 1600 Pennsylvania Ave.,N.W.
User ID:1111111
DAR User Category
Affiliation:Government
****

Item	size (bytes)	Descripition
First Name	20	
Middle Initial	1	
Last Name	20	
E-mail	128	
Telephone	22	include country code
Fax	22	include country code
Postal Code	15	
Country	30	
State	20	
City	30	
Address	96	address without country, state and city.
User ID	16	
DAR User Category	2	number, 1 (highest) - 99 (lowest)
Affiliation	15	Government, commercial, Academic, Other.

Figure 8-3. DAR User Profile Mail Format

8.4 DAR User Profile

The DAR User Profile message will be sent from ECS to ASTER GDS. The DAR User Profile message format is provided in Figure 8-3. The standard E-mail message header to be used in the transmission of the DAR User Profile message is provided as Figure 8-2.

8.5 Remaining DAR Budget

Remaining DAR Budget will be determined automatically based upon the DAR User Category. Changes to the DAR Budget can be made by changing the DAR User Category of the DAR User Profile message (Figure 8-2). Remaining DAR Budget will not be available from either User Profile, but can be accessed by sending an E-mail from the DAR Tool to ASTER GDS. The standard E-mail message to be used is shown in Figure 8-2. The EDC DAAC Operator will send a Remaining Budget Request to ASTER GDS; ASTER GDS will answer with a Remaining DAR Budget Response message.

9. Interface Between ECS GSFC DAAC and GDS ADN/DADS for EDS

9.1 Overview

ECS will provide Expedited Data Sets (EDS) to the ASTER GDS for use in evaluating the operation of the instrument. Expedited Data Sets (EDS) are defined as raw satellite telemetry processed into time-ordered instrument packets with packets separated into files for a given downlink contact. The data flow of the EDS is shown in Figure 9-1. The data format and contents of the EDS are illustrated in the ICD Between EDOS and the EOS Ground System (EGS).

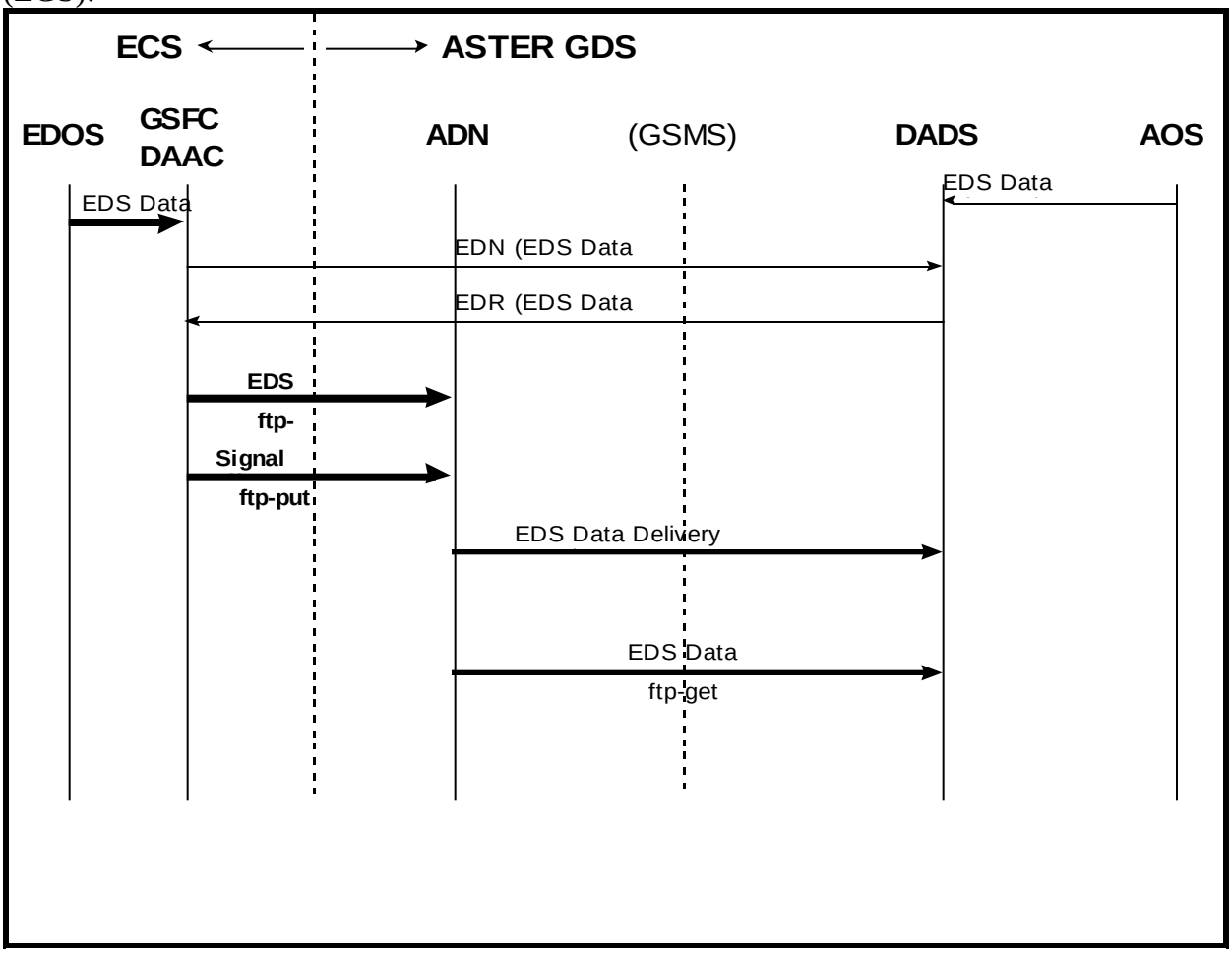

Figure 9-1. EDS Data Transmission Diagram

9.2 EDS Subscription

GSFC DAAC operations will place a subscription to the subscription server, on behalf of the ASTER GDS, once in the beginning of the mission and/or once at a time defined in an Operations Agreement between the ASTER GDS and ECS. Each time the GSFC DAAC receives an EDS from EDOS, the subscription will trigger and automatically cause an e-mail message to be sent to the ASTER GDS DADS, as described below.

9.3 EDS Notification/Request

The GSFC DAAC will automatically notify ASTER GDS DADS each time an ASTER EDS is received from EDOS. This notification will be in the form of an EDS Data Notification (EDN) sent via e-mail, over EBnet. The format of the EDN is shown in Table 9-1 and Table 9-2. ASTER GDS DADS will have the option of ignoring the data notification or requesting EDS based upon the metadata (time range of coverage) contained in the EDN. This request from ASTER GDS DADS will be a EDS Data Request (EDR) sent via e-mail, over Ebnet. The format of the EDR is shown in Table 9-3. Figure 9-2 contains the standard E-mail header to be used when transmitting the EDN and EDR. Note: ASTER GDS/DADS requires only the Construction Record File and CCSDS Packet Data File. The EDS Delivery Record, which is described in the EDOS/EGS ICD, is not required.

Table 9-1. EDS Data Notification (EDN) Format

Parameter	Contents	PVL Date Type	Max Length (Bytes)	Value
OBJECT				'EDS_INFORMATION'
TOTAL_FILE_COUNT	The total number of EDS file. EDS which ASTER GDS side required and EDS which NASA side required is separated to another file.	Integer	4	1-9999
OBJECT	Start of each EDS information. EDS is made by UNIX files.	-	-	EDS_SPEC
BEGINNING_ DATE/TIME	Date and Time (in GMT) of the first CCSDS packet of the EDS.	date/time	20	yyyy-mm-dd-Thh:mm:ss.ddddddZ
ENDING_DATE/TIME	Date and Time (in GMT) of the last CCSDS packet of the EDS.	date/time	20	yyyy-mm-dd-Thh:mm:ss.ddddddZ
APID_COUNT	Number of APIDs in this EDS file.	ASCII	2	≤99
OBJECT	Start of APID specification (repeat for each APID)	ASCII	9	'APID_SPEC'
APID_IN_EDS	Decimal value of the EDOS APID.	ASCII	4	See Next Table
END_OBJECT	End of APID Specification.	ASCII	9	'APID_SPEC'
FILE_ID (UR)	File name.	ASCII	256	
FILE_SIZE	File size in Bytes.	integer	10	4.296*10^9
END_OBJECT	End of parameters for each file group.	-	-	'EDS_SPEC'
END_OBJECT	End of EDS information.	-	-	'EDS_INFORMATION'

Table 9-2. EDS Data Notification (EDN) Format

ASTER Data Group	Operation Mode	APIDS in a EDS (in Hex)
VNIR(1)	Observation	x101, x103
VNIR(2)	Observation	x111, x113
SWIR	Observation	x121, x123
TIR	Observation	x131, x133, x132
VNIR(1)	Calibration	x105, x107
VNIR(2)	Calibration	x115, x117
SWIR	Calibration	x125, x127
TIR	Calibration	x135, x137, x136
VNIR(1)	Test	x109, x10B
VNIR(2)	Test	x119, x11B
SWIR	Test	x129, x12B
TIR	Test	x139, x13B, x13A

Table 9-3. EDS Data Request (EDR) Format

Parameter	Contents	PVL Date Type	Max Length (Bytes)	Value
OBJECT				'EDS_DESINFO'
TOTAL_FILE_COUNT	The total number of EDS file.	Integer	4	1-9999
OBJECT	Start of each file information of GSFC DAAC to ftp-put to ASTER GDS.	-	-	'FILE_SPEC'
FILE_ID (UR)	File name.	ASCII	256	
FILE_SIZE	File size in Bytes.	integer	10	4.296*10^9
END_OBJECT	End of parameters for each file group.	-	-	'FILE_SPEC'
END_OBJECT	End of EDS information.	-	-	'EDS_DESINFO'

```
E-mail Contents Header
BEGIN_OBJECT=GDS_Header;          /* Message Sequential Number  0 ~ 999999999(dec) */
Message_Number=123456789;         /* Re-entarant Check Flag  "Yes", "No" */
ReEntrantCheck=Yes;               /* Sender ID  ECS, GDS */
Sender_ID=GDS;                    /* Receiver ID  ECS, GDS */
Receiver_ID=ECS                   /* Operation Mode  "Operation", "Test" */
Mode=Operation;                   /* Data Sequential Number  0~999999999(dec) */
Data_Number=0;                    /* End-data Flag  "E" or "" */
EndData_Flag=E;                   /* User ID */
Send_Date=1998-08-01;             /* Send Date  yyyy-mm-dd */
Send_Time=06:56:12.056;           /* Send Time  hh:mm:ss.msc */
END_OBJECT=GDS_Header;
/* End of GDS Header */
```

No.	Key	Contents	Value
1	Message_Number	Message serial number in seder segment. A series of Interface sequence is set same number.	"000000000" ~"999999999"(dec) Values are used cyclically.
2	ReEntrantCheck	If this flag is "Yes", same " Message_Number" message can be skipped in Receiver.	"Yes": Check "No": No Check
3	Sender_ID	Identifier of Sender's Segment/Subsystem.	ECS, GDS
4	Receiver_ID	Identifier of Receiver's Segment/Subsystem	Same as Sender_ID
5	Mode	Identifier of Operation Mode / Test Mode.	"Operation" or "Test"
6	Data_Number	Serial Number in the case there are plural data.	"000000000" ~"999999999" (dec)
7	EndData_Flag	Identifier of End data in the case there are plural data.	ASCII Blank (20hex): all data except end one "E": Last data (including in the case of there is only 1 data)
8	Send_Date	Date to send message. Display with yyyy-mm-dd. Use **GMT**. yyyy: Year mm: Month dd: Day	yyyy:0000~9999 mm:01~12 dd:01~28,29,30,31
9	Send_Time	Time to send message. Display with hh:mm:ss.msc. Use **GMT**. hh: Hour (24hour system) mm: Minute ss: Second msc: Milli Second	hh:00~23 mm:00~59 ss:00~59 msc:000~999 Use MSCif necessary. Set 000 if not necessary.

Figure 9-2. Standard E-mail Header

9.4 EDS Transmission/Authentication

The EDS file will be transferred from the GSFC DAAC host computer to the ASTER GDS CSMS ADN FTP server by using standard FTP put protocol. Immediately upon completion of the FTP of the data file, ECS will transmit a 'signal file' to the same directory on the receiving host computer. The 'signal file' will be used by the receiving host to identify the completion of the file transfer of the EDS data file. The GSFC DAAC host computer will send a standard UNIX password to ADN ftp for authentication. Registered mail will be used to exchange passwords for ftp authentication.

9.5 Non-Receipt of EDS

In the event that ASTER GDS does not receive requested data, it will communicate with GSFC DAAC via phone or e-mail for problem resolution, as documented in Operations Agreement Between the GSFC DAAC and ASTER GDS SDPS.

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Appendix A. Work-Off Plan

ICD Issue	ICD Para.	ICD Prior-ity	ICD Issue Type - Description	Work-off Plan (Task(s)	Proj. Resolu-tion Date	Risk Assessment**
1	4.4	A	Use of DCE and Kerberos for security authentication in the EOC is TBR	Baseline DCE and Kerberos; awaiting approval confirmation of export license for Keberos. No impact to ASTER GDS development; this is an ECS-internal issue.	1/15/97	Closed
2	4.6.3 Fig 4-6	B	Relationship correspondence of the Product Delivery Record File to the Product File Group is TBR	Meet with ERSDAC on 12/17-19 to resolve issue. Issue was resolved at this meeting.	12/96	Closed
3	4.6 Tble 4-2	B	Format of PDR - Archive_File_Offset, contents, i.e., #of EOFs to be skipped, File_Type (Value Column) Science, Browse, XAR, Granule ID (max length bytes), XAR ID, XAR Type are all TBR	ECS Ingest is working this issue with ERSDAC and anticipates resolving by the due date.	1/15/97	Closed
4	4.6 Tble 4-3	B	Format of Data Shipping Notice - Volume_ID and Create_Date_Time (Value Column) is TBR	Value column has been deleted.	1/15/97	Closed
5	4.6.3.9 Tble 4-6	B	File Naming Convention of L1 Products, i.e., ASTER L1A and ASTER L1B in value column in Product Level is TBR	Same as above	12/96	Closed
6	4.6.3.10 Tble 4-5	B	Definition of Bar Code Format for Media Delivery to EDC - media type (value column) Reprocessed and resent D3 Cassette tape is different from “E”. This value is TBD	ECS is awaiting response from ERSDAC.	2/15/97	Closed - Info contained in DCN#1 to ICD.

7	4.3.3	A	ERSDAC recommends adding language which states “File transfers between ECS SDPS and ASTER GDS SDPS for Science S/W Dev. & Delivery are accomplished through standard ftp”. There is no ftp connectivity here.	All reference to Science S/W Development and delivery has been removed from this paragraph as agreed by ECS and ERSDAC.	12/96	Closed
8	ERSDAC Proposed Section 10	A	Proposed Data Flow Definition Table, items 21-30 indicate via ftp connection. The ECS IST-EOC I/F is via the IST toolkit furnished by ECS. The protocol to transmit data between ECS IST and EOC is TBD.	This has been determined by ECS; is not an interface with ERSDAC.	12/96	Closed
9	ERSDAC Proposed Section 10	C	Proposed Data Flow Definition Table, items 21-24. There is no requirement for FOS to provide Command Event History Reports to the AOS - but this is a generic capability that is available through the ECS IST. ECS would prefer “not” to show this data flow in the ICD (TBR)	Inclusion of data flow diagram in ICD is TBD. Issue has been assigned to FOS for resolution.	1/15/97	Closed. Proposed Data Flow Definition Table will not be in ICD.
10	ERSDAC Proposed Section 10	A	In the proposed Data Flow Definition Table (EOSDIS User access to ASTER GDS) items 1-8, indicate that these data flows should be via internet. *This is not correct; these data flows are via EBnet.*	ECS confirmed that these data flows are EBnet.	12/96	Closed
11	5.8, 5.9, 5.13, 5.14	A	ERSDAC is considering deleting ICOS2 that has capability of command execution verification from AOS. If ICOS2 is deleted, these data flows between AOS and ECS IST will be deleted. *ECS has no issue with ERSDAC deleting these interfaces.*	ERSDAC is deleting these data flows from ICOS2. These changes have been incorporated into this ICD.	12/96	Closed

12	8, page 8-1, Table 8-1	A	ERSDAC wants to make it an SMC responsibility for notifying affected ECS sites impacted by a planned ASTER maintenance activity. The SMC would have to manually forward the Trouble Ticket (TT) to sites that are impacted by an ASTER maintenance activity. This issue is TBR.	MSS is proceeding with the assumption that SMC operations takes responsibility for manually filling in AffectedSites field of Trouble Ticket and forwarding ticket to impacted sites.	12/96	Closed
13	8, Table 8-2	A	Domain Site to Domain ID Mapping. ASTER asks to extend the existing mapping to include the "Segment, Subsystem, Services" provided at the site. ECS does not concur. This issue is TBR.	Proceeding with MSS proposal to accept this format if ASTER sends it (since it's a freeform field anyway) but not to send it. Instead, MSS will include an AffectedService field specifying service affected.	12/96	Closed
14	4, Figure 4A	C	Figure 4-A Data Flow Diagram via ECS IST Toolkit. The diagram proposed by ERSDAC is not entirely correct. The final recipient of these data flows (ICOS, IASS, ASM) is still TBD.	Figure 4a has been deleted	12/96	Closed
15	Proposed Section 10	C	ERSDAC proposed that Section 10 contain all of the interface diagrams for interface testing. It may be more appropriate to put these data flow diagrams in a test document. This issue is TBR.	Glen Iona/ESDIS and ERSDAC assigned action to determine which test document, if applicable, should contain these referenced interface diagrams for testing.	12/96	Closed. Data flow diagrams for interface testing will be contained in a test document.
16	Proposed Appendix	C	ECS recommends that the DAR Input Parameter List not be a separate Appendix. Since this information is contained in Table 1 of the DAR API List, a separate Appendix is not needed. This issue is TBR.	ERSDAC concurs that DAR Input Parameter List is part of the DAR Client API List, and should not be a separate Appendix in the ICD.	12/96	Closed
17	App. B	B	ODL Message Keywords (Objects) needs to be finalized between ECS and ERSDAC.	This issue will be closed pending ERSDAC review of updated ODL Message Keywords contained in Appendix B of 12/23 version of ICD.	2/15/97	Closed. ODL Message Keywords have been finalized between ECS and ERSDAC.

18	Appx. E	B	ASTER L1A/L1B Data Format Specification Stored in Physical Media TBS by ERSDAC	ECS Jo Pulkkinen determined that ASTER L1A/L1B Data Specification Stored in Physical Media is adequately covered in Section 4 of this ICD and therefore, a separate Appendix is not required.	12/96	Closed.
19	4.6 Fig 4-7	B	Sample Product Delivery Record (PDR) PVL -Data Type=ASTL1A (TBR)	ECS (Karl Cox) has confirmed that the data type for ASTER is L1A and L1B.	1/15/97	Closed
20	6.6	B	Valids Exchange - information about valid formats and definition is TBD.	Valids Exchange information has been incorporated into the ICD.	1/15/97	Closed
21	6.7	B	Guide and Guide Searches - GDS Guide for ASTER will be delivered by TBD media.	Preferred media is D3 tape using standard ECS delivery records. The information in the tape delivery record will identify the tape items (which are documentation) Please note that the implementation of the document data server in ECS has been moved to Release B.1.	1/15/97	Closed
22	6.8	B	DAR User Profile Mail Format is TBS	MSS reviewed format of DAR User Profile provided by ERSDAC and prefers not to build/code a formatted E-mail message. MSS preference is to attach a comma/tab delimited file to an E-mail message with the fields identified in the ASTER response. (TBR)	2/15/97	Closed. DAR User Profile Format has been determined and is part of DCN#1.
23	8-3 Fig 8-1	B	#Transfer Schema E-mail Template - AffectedService is TBD	MSS proposed ECS values for this field and submitted for architect office/subsystem review; response from review is pending. ERSDAC indicated that their services list was incomplete but ECS has not received any revisions from them. (TBR)	2/15/97	Closed. This field has been deleted and this change is reflected in DCN#1.
24	8-3 Tble 8-2	B	AffectedService - TBS	MSS proposed ECS values for this field and submitted for architect office/subsystem review; response from review is pending. ERSDAC indicated that their services list was incomplete but ECS has not received any revisions from them. (TBR)	2/15/97	Closed. This field has been deleted and change is reflected in DCN#1.

25	9 TBLs 9-1 and 9-2	B	Contents of Tables 9-1 and 9-2 are TBS	ECS/Shankar Rachakonda will review and revise these tables to include Construction Record and all other files which will be transferred with the EDS.	2/15/97	Closed. Contents of Tables 9-1 and 9-2 have been finalized and are reflected in DCN#1.
26	App. B Keywrd	B	ACKNOWLEDGE - Synopsis, Parent Group, ODL Type TBD AUTHENTICATION_ID - Synopsis, ODL Type, Max Length TBD CONTENT_NAME - Synopsis, Child Group(s), ODL Type TBD FORMAT_ID Synopsis, Child Group(s), ODL Type TBD INITIATOR_REQUEST_ID - Max Length TBS NUMBER_OF_MEDIA_FORMAT - Synopsis, Child Group(s), ODL Type TBD ORDER_STATUS_INFO - Synopsis, ODL Type TBD PRICE_COMMENT - Synopsis, ODL Type, Max Length TBD PROCESSING_DATA_CENTER - Synopsis, Child Group(s), ODL Type TBD QUADRANT_CLOUD_COVERAGE - ODL Type TBS RECEIVE_DATE - Synopsis, Child_Group(s), ODL Type TBD REQUESTER_ID -Synopsis, Child_Group(s), ODL Type TBD SENSOR_TYPE - Synopsis, Child_Group(s), ODL Type TBD VERSION -Synopsis, ODL Type, Max Length TBD XAR_ID - Max Length TBS XHAIRS - Synopsis, ODL Type. Max Length TBD SERVICE STATE TABLE Process Product Status Request, TX Product Status Info, Process Product Cancel Request, TX Product Cancel Response, Process Price Estimate Request, TX Price Estimate Result (TX QUIT (Status Code TBD)	This issue is being agressively worked by both ECS and ERSDAC and is progressing toward completion.	2/15/97	Closed. Appendix B (ODL Keywords) has been updated and changes are reflected in DCN#1.

27	Table 4-2	B	Granule_ID, XAR_INFO_COUNT, XAR_ID and XAR_TYPE - Maximum Length (Bytes) and Value are TBR	Awaiting response from ERSDAC.	2/15/97	Closed. Table 4-2 has been updated and is included in DCN#1.
28	Section 4-9 and 9	C	ECS implementation of expedited data requirement is contingent upon approval of ESD#27.	ECS administrative issue that is aggressively being worked.	2/1/97	Closed. ESD#27 has been approved.

* Issue Priority Definition:

A = Design impact; e.g., unresolved interface.

B = Minimal design impact; e.g., content or format of a specific field unresolved.

C = No design impact - administrative detail; e.g., reference document # not available.

** Risk Assessment Definition:

1 - Risk if issue is not resolved by CDR

2 - Risk if issue is not resolved by projected resolution date

Appendix B. ODL Message Keywords (Objects)

B.1 ODL Message Keywords

This section identifies and defines each of the ODL Message keywords corresponding to the ODL descriptions provided in Section 6 of this document. Each keyword is defined, as applicable, in terms of synopsis (short English-Language description of the keyword), parent groups, children, ODL type [e.g., integer, real, date, string, aggregate (i.e., the keyword object contains children), symbol, sequence string (i.e., 0 or more strings entered on separate lines), and character string], maximum (value) length, and possible values. If no possible values are specified, then any possible value for the stated ODL type is legal. For example, an ACCOUNT_NUMBER may be any string up to 80 characters. The ODL keywords described in this section are derived from the "Messages and Development Data Dictionary - V0 and Release A Message Passing Protocol Specification," 9/95. Section B.2 provides the ODL message keywords which are ASTER GDS extensions to the V0 ODL specification, and section B.3 provides the Server State Table.

Keyword: ACCOUNT_NUMBER
Synopsis: Account identifier provided by a DAAC.
Parent Group(s):VALID_ACCOUNTS
ODL Type: String
Maximum Length: 80
Note: ASTER GDS does not return this keyword, as this Parent Group is (VALID_ACCOUTS)*.

Keyword: ADDRESS
Synopsis: Address information can be entered using three lines.
Parent Group(s): [BILLING_ADDRESS], CONTACT_ADDRESS, [SHIPPING_ADDRESS], [DAAC_CONTACT_ADDRESS], DATA_SET_CONTACT
ODL Type: Sequence String
Field length: 32 x 3 (96)

Keyword: ACKNOWLEDGE
Synopsis: Message group used to acknowledge chunks of an Inventory Results transfer
Parent Group(s): Not used
Child group(s): MESSAGE_ID, MONITOR, VERSION
ODL Type: Aggregate

Keyword: APPROX_COST
Synopsis: Estimated cost for the selected data package.
Parent Group(s): MEDIA_FORMAT
ODL Type: Real
Maximum Length: 16

Possible value(s): 0.0 to 9999999999999.99
Note: Though APPROX_COST is a mandatory keyword, ASTER GDS can not provide the value of this keyword.

Keyword: AUTHENTICATOR
Synopsis: Encrypted value from authentication key, last name, first name. Passed with every request (if authentication key is not blank).
Parent Group(s): [BROWSE_REQUEST], [PRODUCT_REQUEST], [INVENTORY_SEARCH], [DIRECTORY_SEARCH], QUIT
ODL Type: String
Maximum Length: 16
Note: This keyword is not used between ECS and ASTER GDS.

Keyword: BALANCE
Synopsis: Dollar amount remaining for a particular account.
Parent Group(s): [VALID_ACCOUNTS]
ODL Type: Real
Maximum Length: 16
Note: ASTER GDS does not return this keyword.

Keyword: BILLING_ADDRESS
Synopsis: Billing address for data order.
Parent Group(s): [PRODUCT_REQUEST]
Child Group(s): CITY, [EMAIL], [FAX], FIRST_NAME, [MIDDLE_INITIAL], LAST_NAME, PHONE, [STATE], COUNTRY, [ZIP], [TITLE], [ORGANIZATION], [ADDRESS]
ODL Type: Aggregate

Keyword: BROWSE_GRANULES
Synopsis: granule(s) request
Parent Group(s): BROWSE_REQUEST
Child Group(s): DATASET_ID, GRANULE_ID
ODL Type: Aggregate

Keyword: BROWSE_ONLY
Synopsis: Only granules with associated browse images should be returned from the INVENTORY_SEARCH.
Parent Group(s): [INVENTORY_SEARCH]
ODL Type: Symbol
Maximum Length: 1
Possible value(s): Y

Keyword: BROWSE_PRODUCT_DESCRIPTION
Synopsis: Data set specific browse product (image) description
Parent Group(s): [DATASET]
ODL Type: Sequence String
Maximum Length: 80

Keyword: BROWSE_REQUEST
Synopsis: Provide information for obtaining browse image
Child Group(s): BROWSE_TYPE, MESSAGE_ID, MONITOR group, CONTACT_ADDRESS group, BROWSE_GRANULES group, [AUTHENTICATOR], DATA_CENTER_ID, VERSION group, [ECS_AUTHENTICATOR], USER_AFFILIATION
ODL Type: Aggregate

Keyword: BROWSE_TYPE
Synopsis: Type of delivery for browse image
Parent Group(s): BROWSE_REQUEST, [GRANULE]
ODL Type: Symbol
Maximum Length: 8
Possible value(s): Y | N | FTP_Only
Notes:
If Y is in a request, then = 'send integrated browse'.
If Y is in a granule, then = 'available in integrated browse'.
If N is in a granule, then = 'not available'.
If FTP is in granule, then = 'available only as FTP'.
Note: For ASTER GDS only Integrated Browse is utilized.

Keyword: CAMPAIGN
Synopsis: Name of campaign/project that gathered data.
Parent Group(s): [DIRECTORY_SEARCH], [DATASET], [GRANULE], [INVENTORY_SEARCH]
ODL Type: Sequence_String
Maximum Length: 80

Keyword: CATEGORY
Synopsis: Affiliation category for a user
Parent Group(s): USER_AFFILIATION
ODL Type: String
Maximum Length: 7
Possible value(s): USA, NOT USA

Keyword: CENTROID_LAT
Synopsis: Used for part of center point coordinate in the case where a granule is described as a polygon.
Parent Group(s): POLYGON_LOC group for INVENTORY_RESULTS
ODL Type: Real
Maximum Length: 8

Keyword: CENTROID_LON
Synopsis: Used for part of center point coordinate in the case where a granule is described as a polygon.
Parent Group(s): POLYGON_LOC group for INVENTORY_RESULTS
ODL Type: Real
Maximum Length: 8

Keyword: CITY
Synopsis: Name of the city of the associated address
Parent Group(s): BILLING_ADDRESS, CONTACT_ADDRESS, SHIPPING_ADDRESS, DAAC_CONTACT_ADDRESS
ODL Type: String
Maximum Length: 30
Possible value(s): any string

Keyword: COMMENT
Synopsis: Data Center provided information about corresponding granule or data set.
Parent Group(s): [DATASET], [GRANULE], PACKAGE
ODL Type: Sequence String
Maximum Length: 60
Possible value(s): any string

Keyword: CONTACT_ADDRESS
Synopsis: The address portion of a user's contact information.
Parent Group(s): BROWSE_REQUEST, PRODUCT_REQUEST
Child Group(s): CITY, EMAIL, [FAX], FIRST_NAME, [MIDDLE_INITIAL], LAST_NAME, PHONE, [STATE], COUNTRY, [ZIP], [TITLE], ORGANIZATION, ADDRESS
ODL Type: Aggregate

Keyword: CONTACT_NAME
Synopsis: Name of contact for current order fulfillment.
Parent Group(s): DAAC_CONTACT_ADDRESS
ODL Type: String

Keyword: COUNTRY
Synopsis: The name for the country of the associated address
Parent Group(s): SHIPPING_ADDRESS, BILLING_ADDRESS, CONTACT_ADDRESS, DAAC_CONTACT_ADDRESS
ODL Type: String
Maximum Length: 30

Keyword: DAAC_CONTACT_ADDRESS
Synopsis: The Data Center's User Services Office contact information.
Parent Group(s): PRODUCT_RESULT group
Child Group(s): CONTACT_NAME, ORGANIZATION, [ADDRESS], CITY, [STATE], [ZIP], COUNTRY, PHONE, [FAX], [EMAIL]
ODL Type: Aggregate

Keyword: DATA_CENTER_ID
Synopsis: Acronym form of the name of data center transmitting message.
Parent Group(s): DIRECTORY_RESULT, INTEGRATED_BROWSE_RESULT, INVENTORY_RESULT, PRODUCT_RESULT, PRODUCT_REQUEST, PACKAGE, BROWSE_REQUEST, [QUIT], PRODUCT_STATUS_INFO,

PRICE_ESTIMATE_REQUEST, PRICE_ESTIMATE_RESULT, PRODUCT_CANCEL_RESULT
ODL Type: Sequence String
Maximum Length: 10

Keyword: DATASET
Synopsis: Group to describe a data set and associated granules from the result set
Parent Group(s): DIRECTORY_RESULT, INVENTORY_RESULT
Child group(s) of DIRECTORY_RESULT: [DATA_SET_CONTACT group], DATASET_ID, DATASET_SUMMARY, DISCIPLINE, [SENSOR_NAME], [SOURCE_NAME], [SPATIAL_COVERAGE group], [START_DATE], [STOP_DATE], TERM, TOPIC, VARIABLE
Child group(s) of INVENTORY_RESULT: [BROWSE_PRODUCT_DESCRIPTION], [CAMPAIGN], [COMMENT], DATASET_ID, [DAY_NIGHT], [GRANULE], [MD_ENTRY_ID], [NUMBER_OF_GRANULE_HITS], [PACKAGE], [PARAMETER], [PROCESSING_LEVEL], [SENSOR_NAME], [SOURCE_NAME], [RESTRICTION], STATUS_CODE, [VALID_ACCOUNTS]
ODL Type: Aggregate

Keyword: DATASET_ID
Synopsis: Name(s) of valid IMS data set(s)
Parent Group(s): DATASET, [DIRECTORY_SEARCH], DIRECTORY_RESULT, IMAGE, [INVENTORY_SEARCH], PACKAGE, PRODUCT_DELIVERY, SUB_REQUEST_STATUS_INFO, BROWSE_GRANULES
ODL Type: Sequence String
Maximum Length: 80

Keyword: DAY_NIGHT
Synopsis: Data gathered during "day" or "night"
Parent Group(s): [GRANULE], [DATASET], [INVENTORY_SEARCH]
ODL Type: Symbol
Maximum Length: 1
Possible value(s): D | N
Note: DATASET unique and is under review.

Keyword: DIRECTORY_RESULT
Synopsis: Provides result of directory level query against data center.
Child Group(s): DATA_CENTER_ID, DATASET Group, MESSAGE_ID, MONITOR group, NUMBER_OF_DATASETS, STATUS_CODE, [STATUS_CODE_COMMENT], VERSION
ODL Type: Aggregate
Note: DIRECTORY_RESULT is returned by only ECS.

Keyword: DIRECTORY_SEARCH
Synopsis: Provides data for directory level search of data center
Child Group(s): [DATASET_ID], MESSAGE_ID, MONITOR group, [RANGE_LOC group], [CAMPAIGN], [PARAMETER], [SENSOR_NAME], [SOURCE_NAME],

[START_DATE], [STOP_DATE], [AUTHENTICATOR], [ECS_AUTHENTICATOR], VERSION
ODL Type: Aggregate
Note: DIRECTORY_SEARCH is requested by only ASTER GDS users.

Keyword: EAST_LONGITUDE
Synopsis: Eastern most longitude for an area on the globe
Parent Group(s): RANGE_LOC
ODL Type: Real
Maximum Length: 9
Possible value(s): -180.0000 to +180.0000

Keyword: ECS_AUTHENTICATOR
Synopsis: Optional in every outgoing client message. Used for interfacing with ECS registration.
Parent Group(s): [INVENTORY_SEARCH], [BROWSE_REQUEST], [PRODUCT_REQUEST], [DIRECTORY_SEARCH], [QUIT]
ODL Type: String
Maximum Length: 100

Keyword: EMAIL
Synopsis: Internet e-mail address for associated person
Parent Group(s): [BILLING_ADDRESS], CONTACT_ADDRESS, [SHIPPING_ADDRESS], [DAAC_CONTACT_ADDRESS], DATA_SET_CONTACT
ODL Type: String
Maximum Length: 128
Possible value(s): any string

Keyword: ERROR
Synopsis: Data Center provided freetext information about VALID_ACCOUNTS details. Provides multiple line of information.
Parent Group(s): [VALID_ACCOUNTS]
ODL Type: Sequence string
Maximum Length: 80
Note: ASTER GDS does not return this keyword.

Keyword: FAX
Synopsis: FAX phone number for associated person
Parent Group(s): [BILLING_ADDRESS], [CONTACT_ADDRESS], [SHIPPING_ADDRESS], [DAAC_CONTACT_ADDRESS], [DATA_SET_CONTACT]
ODL Type: String
Maximum Length: 22
Possible value(s): any string

Keyword: FIRST_NAME
Synopsis: The user's first name
Parent Group(s): BILLING_ADDRESS, CONTACT_ADDRESS, SHIPPING_ADDRESS, [DATA_SET_CONTACT]
ODL Type: String
Maximum Length: 20
Possible value(s): any string

Keyword: FORMAT_ID

Synopsis: Description of one possible media distribution format for delivering selected data. One of the FORMAT_IDs listed in the group MEDIA_FORMAT of PACKAGE group in a INVENTORY_RESULT must be returned for ordering that package.

Parent Group(s): MEDIA_FORMAT

ODL Type: String

Maximum Length: 30

Keyword: GLOBAL_GRANULE

Synopsis: Granule has global coverage

Parent Group(s): GRANULE

ODL Type: Symbol

Maximum Length: 1

Possible value(s): Y

Note: This keyword maybe used to replace a LOC group if the granule indeed has global coverage.

ASTER GDS has no granule which has global coverage so far.

Keyword: GLOBAL_GRANULES_ONLY

Synopsis: Only global granules should be returned in the result.

Parent Group(s): INVENTORY_SEARCH

ODL Type: Symbol

Maximum Length: 1

Possible value(s): Y

Note: ASTER GDS has no granule which has global coverage so far.

Keyword: GRANULE

Synopsis: Collection of metadata about data granule

Parent Group(s): DATASET

Child Group(s): [BROWSE_TYPE], GRANULE_ID, [PARAMETER], POINT_LOC group, POLYGON_LOC group, [PROCESSING_LEVEL], RANGE_LOC group, [SENSOR_NAME], [SOURCE_NAME], START_DATE, STOP_DATE, [CAMPAIGN], [COMMENT], [DAY_NIGHT], GLOBAL_GRANULE, [PACKAGE_ID], [SCENE_CLOUD_COVERAGE], [QUADRANT_CLOUD_COVERAGE], [XAR_ID]

ODL Type: Aggregate N/A

Notes:

1. One and only one of the groups or keywords defining spatial coverage of the granule is required.
2. PARAMETER and CAMPAIGN are required if provided in the INVENTORY_SEARCH, except for the ASTER GDS.
3. If SENSOR_NAME and SOURCE_NAME are not given the DATASET level, SENSOR_NAME and SOURCE_NAME must be given at the GRANULE level.

Keyword: GRANULE_ID
Synopsis: Granule's ID from Inventory
Parent Group(s): BROWSE_REQUEST, GRANULE, IMAGE
ODL Type: String
Maximum Length: 50
Possible value(s): any string

Keyword: GRANULE_LIMIT
Synopsis: Number of granules requested per data set
Parent Group(s): INVENTORY_SEARCH
ODL Type: Integer
Maximum Length: 10
Possible value(s): 1 to 2147483647

Keyword: IMAGE
Synopsis: Provides attributes of an image
Parent Group(s): INTEGRATED_BROWSE_RESULT
Child Group(s): DATASET_ID, GRANULE_ID, IMAGE_ID, IMAGE_SIZE
ODL Type: Aggregate

Keyword: IMAGE_ID
Synopsis: Image identifier from Data Center
Parent Group(s): IMAGE group
ODL Type: String
Maximum Length: 30
Possible value(s): any string

Keyword: IMAGE_SIZE
Synopsis: Image size in bytes
Parent Group(s): IMAGE group
ODL Type: String
Maximum Length: 10
Possible value(s): 1 to 2147483647
Keyword: IMS_STAFF
Synopsis: Sent with every client message. Usually blank unless the client was run by a member of the IMS Staff. It comes from the IMS staff environment variable (shell set).
Parent Group(s): [VERSION]
ODL Type: String
Note: ASTER GDS does not return this keyword.

Keyword: INFO_PROMPT
Synopsis: Data Center-supplied string to describe use of 'additional info' on the Order screen.
Parent Group(s): [PACKAGE]
ODL Type: String
Maximum Length: 80
Note: ASTER GDS does not return this keyword.

Keyword: INITIAL_USER_KEY
Synopsis: Set by shell for Data Center hosted clients. Original password used at the Data Center when first registering a user.
Parent Group(s): [PRODUCT_REQUEST]
ODL Type: String
Maximum Length: 12
Note: This keyword is not used between ECS and ASTER GDS.

Keyword: INTEGRATED_BROWSE_RESULT
Synopsis: Provides result of BROWSE_REQUEST
Child Group(s): DATA_CENTER_ID, IMAGE group, MESSAGE_ID, MONITOR Group, STATUS_CODE, [LAST_BROWSE], VERSION
ODL Type: Aggregate

Keyword: INVENTORY_RESULT
Synopsis: Provides result set from inventory query
Child Group(s): DATA_CENTER_ID, MESSAGE_ID, MONITOR group, [NUMBER_OF_DATASETS], STATUS_CODE, [DATASET group], [UNMAPPED_FIELD], [STATUS_CODE_COMMENT], [PACKAGE], VERSION
ODL Type: Aggregate

Keyword: INVENTORY_SEARCH
Synopsis: Provides data to perform inventory query
Child Group(s): GRANULE_LIMIT, MESSAGE_ID, MONITOR group, [BROWSE_ONLY], [CAMPAIGN,] [DATASET_ID], [DAY_NIGHT], GLOBAL_GRANULES_ONLY, [PARAMETER], POINT_LOC group, POLYGON_LOC group, [PROCESSING_LEVEL], RANGE_LOC group, [SENSOR_NAME], [SOURCE_NAME], [START_DATE], [START_DAY_OF_YEAR], [STOP_DATE], [STOP_DAY_OF_YEAR], [AUTHENTICATOR], [ECS_AUTHENTICATOR], [XAR_ID], [CLOUD_COVERAGE], XHAIRS, VERSION
ODL Type: Aggregate
Note: For Requests Originating from ASTER GDS users, one and only one type of spatial coverage is required in the INVENTORY_SEARCH group and at least one of the DATASET_ID, SENSOR_NAME, or PARAMETER keywords.
For Requests Originating from ECS users, one type of spatial coverage is required in the INVENTORY_SEARCH group and at least one of the DATASET_ID or SENSOR_NAME keywords. Because ASTER GDS might not define values of "PARAMETER", ASTER GDS Product Search by "PARAMETER" was eliminated.

Keyword: LAST_NAME
Synopsis: The user's last name.
Parent Group(s): BILLING_ADDRESS, CONTACT_ADDRESS, SHIPPING_ADDRESS, [DATA_SET_CONTACT]
ODL Type: String
Maximum Length: 20

Keyword: LAST_BROWSE
Synopsis: Used in integrated browse to indicate the last browse in a series has not been received.
Parent Group(s):[INTEGRATED_BROWSE_RESULT]
ODL Type: Symbol
Maximum Length: 1
Possible values: 0, 1
Note: If LAST_BROWSE = 0, then the final file of the integrated browse has not been transmitted.
If LAST_BROWSE = 1, when the last browse file is transmitted.

Keyword: LATITUDE
Synopsis: Latitude for a point on the globe.
Parent Group(s): POINT_LOC, POLYGON_LOC, XHAIRS
ODL Type: Sequence Real
Maximum Length: 8
Possible value(s): -90.0000 to +90.0000

Keyword: LATITUDE_DISTANCE
Synopsis: Degrees separating center point and latitude corner point.
Parent Group(s): XHAIRS
ODL Type: String
Maximum Length: 9

Keyword: LONGITUDE
Synopsis: Longitude for a point on the globe.
Parent Group(s): POINT_LOC, POLYGON_LOC, XHAIRS
ODL Type: Sequence Real
Maximum Length: 9
Possible value(s): -180.0000 to +180.0000

Keyword: LONGITUDE_DISTANCE
Synopsis: Degrees separating center point and longitude corner point.
Parent Group(s): XHAIRS
ODL Type: String
Maximum Length: 10

Keyword: MAP_PROJECTION_TYPE
Synopsis: Map projection type selected by the user.
Parent Group(s): POLYGON_LOC group for INVENTORY_SEARCH
ODL Type: String
Maximum Length: 80
Possible value(s): PLATE_CARREE, NORTH_POLAR_STEREOGRAPHIC, SOUTH_POLAR_STEREOGRAPHIC

Keyword: MD_ENTRY_ID
Synopsis: Global Change Master Directory Entry ID
Parent Group(s): [DATASET]
ODL Type: String
Maximum Length: 31
Possible value(s): any string

Keyword: MEDIA_FORMAT
Synopsis: Media distribution format for delivering selected data.
Parent Group(s): , MEDIA_TYPE,
Child Group(s): APPROX_COST, FORMAT_ID
ODL Type: String, Aggregate (see note)
Maximum Length: 30, group (see note)

Keyword: MEDIA_TYPE
Synopsis: The distribution media for delivering selected data.
Parent Group(s): , PACKAGE, PROCESSING_OPTIONS,
Child Group(s): TYPE_ID, NUMBER_OF_MEDIA_FORMAT, MEDIA_FORMAT
ODL Type: String, Aggregate (see note)
Maximum Length: 20, group (see note)

Keyword: MESSAGE_ID
Synopsis: Identifier used to track messages.
Parent Group(s): BROWSE_REQUEST, DIRECTORY_RESULT, DIRECTORY_SEARCH, INTEGRATED_BROWSE_RESULT, INVENTORY_RESULT, INVENTORY_SEARCH, PRODUCT_REQUEST, PRODUCT_RESULT, ACKNOWLEDGE, QUIT, PRODUCT_STATUS_REQUEST, PRODUCT_STATUS_INFO, PRICE_ESTIMATE_REQUEST, PRICE_ESTIMATE_RESULT, PRODUCT_CANCEL_REQUEST, PRODUCT_CANCEL_RESULT
ODL Type: String
Maximum Length: 30
Possible value(s): any string
Note: Generated by Gaea, the IMS client software.

Keyword: MIDDLE_INITIAL
Synopsis: One letter initial for the user's middle name.
Parent Group(s): [BILLING_ADDRESS], [CONTACT_ADDRESS], [SHIPPING_ADDRESS], [DATA_SET_CONTACT]
ODL Type: String
Maximum Length: 1

Keyword: MONITOR
Synopsis: Collection of performance statistics.
Parent Group(s): BROWSE_REQUEST, DIRECTORY_RESULT, DIRECTORY_SEARCH, INTEGRATED_BROWSE_RESULT, INVENTORY_RESULT,

INVENTORY_SEARCH, PRODUCT_REQUEST, PRODUCT_RESULT, ACKNOWLEDGE, QUIT, PRODUCT_CANCEL_REQUEST, PRODUCT_CANCEL_RESULT, PRODUCT_STATUS_REQUEST, PRODUCT_STATUS_INFO, PRICE_ESTIMATE_REQUEST, PRICE_ESTIMATE_RESULT
Child Group(s): [RX_CLIENT], [RX_SERVER], TX_CLIENT, [TX_SERVER]
ODL Type: Aggregate
Maximum Length: 84

Keyword: NORTH_LATITUDE
Synopsis: Northern most latitude for an area on the globe.
Parent Group(s): RANGE_LOC
ODL Type: Real
Maximum Length: 8
Possible value(s): -90.0000 to +90.0000

Keyword: NUMBER_OF_DATASETS
Synopsis: Number of data sets included in query result set.
Parent Group(s): DIRECTORY_RESULT, [INVENTORY_RESULT]
ODL Type: Integer
Maximum Length: 10
Possible value(s): 1 to 2147483647

Keyword: NUMBER_OF_GRANULES
Synopsis: The number of granules included in the package.
Parent Group(s): PACKAGE , [SUB_REQUEST_STATUS_INFO]
ODL Type: Integer
Maximum Length: 10
Possible value(s): 1 to 2147483647

Keyword: NUMBER_OF_GRANULE_HITS
Synopsis: Number of granules from this data set included in query result set.
Parent Group(s): [DATASET]
Child Group(s):
ODL Type: Integer
Maximum Length: 10
Possible value(s): 1 to 2147483647

Keyword: NUMBER_OF_MEDIA_TYPE
Synopsis: Indicates how many media choices are available.
Parent Group(s): PROCESSING_OPTIONS
ODL Type: Integer
Maximum Length: 10
Possible value(s): 1 to 2147483647

Keyword: NUMBER_OF_MEDIA_FORMAT
Synopsis: Number of MEDIA_IDs in the following MEDIA_FORMAT group.
Parent Group(s): MEDIA_TYPE
ODL Type: Integer

Keyword: NUMBER_OF_OPTIONS
Synopsis: Indicates how many processing options are available.
Parent Group(s): PACKAGE
ODL Type: Integer
Maximum Length: 10
Possible value(s): 1 to 2147483647

Keyword: OPTION_ID
Synopsis: The valid value for selected processing options.
Parent Group(s): PROCESSING_OPTIONS
ODL Type: String
Maximum Length: 30

Keyword: ORGANIZATION
Synopsis: Additional address information, e.g., NASA.
Parent Group(s): CONTACT_ADDRESS, DAAC_CONTACT_ADDRESS,
[BILLING_ADDRESS], [SHIPPING_ADDRESS]
ODL Type: String
Maximum Length: 60

Keyword: PACKAGE
Synopsis: The collection of granules or data which can be ordered from an archive.
Parent Group(s): INVENTORY_RESULT, DATASET
Child Group(s): DATA_CENTER_ID, DATASET_ID PACKAGE_ID, COMMENT,
NUMBER_OF_GRANULES, NUMBER_OF_OPTIONS, PROCESSING_OPTIONS,
[INFO_PROMPT], MEDIA_TYPE
ODL Type: String
Notes:
1. OPTION 1: for use when all package information is sent for the whole inventory result and is sent before the first DATASET group (disfavored and may not be implemented).
2. OPTION 2: for use when package information is sent in front of each relevant data set group.
3. OPTION 3: for use when package information is sent within each relevant data set group and before the granule group(s).

Keyword: PACKAGE_ID
Synopsis: Names of valid IMS distributed products. If the package information is the same for all granules in the data set and there is one product per granule, then use the character '*' for the PACKAGE_ID.
Parent Group(s): [GRANULE], PACKAGE, PRODUCT_DELIVERY
ODL Type: Sequence String
Maximum Length: 50

Keyword: PACKAGE_SIZE
Synopsis: The size of the package in bytes of data.
Parent Group(s): PROCESSING_OPTIONS
ODL Type: Integer
Maximum Length: 10
Possible value(s): 1 to 2147483647

Keyword: PARAMETER
Synopsis: Valid value that is a geophysical term associated with a data set or granule.
Parameters for product generation
Parent Group(s): [DATASET], [DIRECTORY_SEARCH], [GRANULE], [INVENTORY_SEARCH], PRODUCT_GENERATION
Child Group: PGR_CODE, PGR_VALUE
ODL Type: Aggregate (see note)
Notes:
1. PARAMETER is required in the DATASET or GRANULE groups of the INVENTORY_RESULT group.
2. PARAMETER can be given in the DATASET group if and only if the value of PARAMETER is the same for all the GRANULES in the DATASET group.
3. PARAMETER is used in two contexts
   - Under DATASET, DIRECTORY_SEARCH, GRANULE and INVENTORY_SEARCH group, the values is a geophysical term associated with a data set or granule.
   - Under PRODUCT_GENERATION group this is subgroup name.
4. ASTER GDS might not define values of "PARAMETER". So ASTER GDS Product Search by "PARAMETER" was eliminated.

Keyword: PHONE
Synopsis: Voice telephone number of associated person.
Parent Group(s): BILLING_ADDRESS, CONTACT_ADDRESS, SHIPPING_ADDRESS, DAAC_CONTACT_ADDRESS, DATA_SET_CONTACT
ODL Type: String
Maximum Length: 22
Possible value(s): any string

Keyword: POINT_LOC
Synopsis: Single point on the globe.
Parent Group(s): GRANULE, INVENTORY_SEARCH
Child Group(s): LATITUDE, LONGITUDE
ODL Type: Aggregate

Keyword: POLE_INCLUDED
Synopsis: Pole is included in described search area.
Parent Group(s): [POLYGON_LOC]
ODL Type: Symbol

Maximum Length: 1
Possible value(s): N,| S
Note: If not included in the location group then no pole included in region.

Keyword: POLYGON_LOC
Synopsis: Group of four latitude longitude pairs describing an area on the globe.
Parent Group(s): GRANULE, INVENTORY_SEARCH
Child Group(s) of GRANULE: LATITUDE, LONGITUDE, [POLE_INCLUDED], CENTROID_LAT, CENTROID_LON
Child Group(s) of INVENTORY_SEARCH: LATITUDE, LONGITUDE, [POLE_INCLUDED], MAP_PROJECTION_TYPE, TANGENT_LATITUDE, TANGENT_LONGITUDE
ODL Type: Aggregate

Keyword: PROCESSING_LEVEL
Synopsis: Level to which data has been processed.
Parent Group(s): [GRANULE] [DATASET], [INVENTORY_SEARCH]
ODL Type: Symbol
Maximum Length: 2
Possible value(s): 0, 1, 1a, 1b,| 2, 3, 4
Note: DATASET unique, currently under review

Keyword: PROCESSING_OPTIONS
Synopsis: User requested processing of GRANULE to produce a product.
Parent Group(s): PACKAGE
Child Group(s): OPTION_ID, PACKAGE_SIZE, NUMBER_OF_MEDIA_TYPE, MEDIA_TYPE
ODL Type: Sequence String
Maximum Length: 30

Keyword: PRODUCT_REQUEST
Synopsis: Provides data for product request.
Child Group(s): [BILLING_ADDRESS group], CONTACT_ADDRESS group, DATA_CENTER_ID, MESSAGE_ID, MEDIA group, MONITOR group, [SHIPPING_ADDRESS group], USER_AFFILIATION group, INITIATOR_REQUEST_ID, [AUTHENTICATOR], [ECS_AUTHENTICATOR], [INITIAL_USER_KEY], VERSION
ODL Type: Aggregate

Keyword: PRODUCT_RESULT
Synopsis: Group of information including Data Center contact information acknowledging a product request.
Child Group(s): DATA_CENTER_ID, MESSAGE_ID, MONITOR group, STATUS_CODE, [STATUS_CODE_COMMENT], DAAC_CONTACT_ADDRESS, VERSION
ODL Type: Aggregate

Keyword: PROTOCOL_VERSION
Synopsis: Version of message passing protocol, e.g., 3.5.
Parent Group(s): VERSION
ODL Type: Real

Keyword: QUIT
Synopsis: Termination message.
Child Group(s): MESSAGE_ID, [DATA_CENTER_ID], STATUS_CODE, [STATUS_CODE_COMMENT], [AUTHENTICATOR], [ECS_AUTHENTICATOR], MONITOR, VERSION
ODL Type: Aggregate

Keyword: RANGE_LOC
Synopsis: Group of maximum and minimum latitudes and longitudes describing an area.
Parent Group(s): DIRECTORY_SEARCH, GRANULE, INVENTORY_SEARCH
Child Group(s): EAST_LONGITUDE, NORTH_LATITUDE, SOUTH_LATITUDE, WEST_LONGITUDE
ODL Type: Aggregate

Keyword: RESTRICTION
Synopsis: Details of any ordering restrictions placed on the data set.
Parent Group(s): [DATASET group]
ODL Type: Sequence String
Maximum Length: 60
Possible value(s): any string

Keyword: RX_CLIENT
Synopsis: Time stamp when the client received the entire ODL message
Parent Group(s): [MONITOR group]
ODL Type: Sequence STRING
Maximum Length: 20
Possible value(s): two part: seconds (required), microseconds (optional)
Note: integer number of seconds as returned by the time () call or the gettimeofday call

Keyword: RX_SERVER
Synopsis: Time stamp when the server received the entire ODL message
Parent Group(s): MONITOR group
ODL Type: Sequence STRING
Maximum Length: 20
Possible value(s): two part: seconds (required), microseconds (optional)
Note: integer number of seconds as returned by the time () call or the gettimeofday call

Keyword: SENDER_VERSION
Synopsis: Descriptor identifying the name and number of the sender (client or server) that sent the message.

Parent Group(s): VERSION
ODL Type: String
Maximum Length: 16

Keyword: SENSOR_NAME
Synopsis: Name(s) of sensor.
Parent Group(s): [GRANULE], [DATASET], [DIRECTORY_SEARCH], [DIRECTORY_RESULT], [INVENTORY_SEARCH]
ODL Type: Sequence String
Maximum Length: 30

Keyword: SERVER_VERSION
Synopsis: Optional descriptor identifying the server version, and is stored in the group = VERSION.
Parent Group(s): VERSION
ODL Type: String
Maximum Length: 16

Keyword: SHIPPING_ADDRESS
Synopsis: Address where requested data is to be sent.
Parent Group(s): [PRODUCT_REQUEST]
Child Group(s): CITY, [EMAIL], [FAX], FIRST_NAME, [MIDDLE_INITIAL], LAST_NAME, PHONE, [STATE], COUNTRY, [ZIP], [TITLE], [ORGANIZATION], [ADDRESS]
ODL Type: Aggregate

Keyword: SOURCE_NAME
Synopsis: Name(s) of source/platform.
Parent Group(s): [GRANULE], [DIRECTORY_SEARCH], [DIRECTORY_RESULT], [INVENTORY_SEARCH], [DATASET]
ODL Type: Sequence String
Maximum Length: 30
Keyword: SOUTH_LATITUDE
Synopsis: Southern most latitude for an area on the globe
Parent Group(s): RANGE_LOC
ODL Type: Real
Maximum Length: 8
Possible value(s): -90.0000 to +90.0000

Keyword: START_DATE
Synopsis: Beginning of temporal interest
Parent Group(s): GRANULE, [DIRECTORY_SEARCH], [DIRECTORY_RESULT], [INVENTORY_SEARCH]
ODL Type: Date
Maximum Length: 20
Possible value(s): yyyy-mm-ddThh:mm:ss | yyyy-mm-ddThh:mm:ssZ

Keyword: START_DAY_OF_YEAR
Synopsis: Beginning day of seasonal interest
Parent Group(s): [INVENTORY_SEARCH]
ODL Type: Integer
Maximum Length: 3
Possible value(s): 1 TO 366

Keyword: STATE
Synopsis: US Postal state abbreviation for associated person
Parent Group(s): [BILLING_ADDRESS], [CONTACT_ADDRESS], [SHIPPING_ADDRESS], [DAAC_CONTACT_ADDRESS]
ODL Type: String
Maximum Length: 20
Possible value(s): any string

Keyword: STATUS_CODE
Synopsis: Numeric code giving status of query and/or server
Parent Group(s): DIRECTORY_RESULT, INTEGRATED_BROWSE_RESULT, INVENTORY_RESULT, PRODUCT_RESULT, QUIT, DATASET, PRODUCT_STATUS_INFO, PRICE_ESTIMATE_RESULT, PRODUCT_CANCEL_RESULT
ODL Type: Integer
Maximum Length: 4
Possible value(s): 1 to 20, or 1000
Notes:
01 successful query; query results returned
02 no match found
03 data for selected source are not archived at DAAC
04 data for selected sensor are not archived at DAAC
05 data set is not archived at DAAC
06 data for selected parameter(s) not archived at DAAC
07 data for selected source, sensor, parameter(s) and/or data set are not archived at DAAC
08 pertinent inventory system unavailable, try again later
09 bad message; message contains syntax error(s)
10 requested function not supported by this DAAC
11 system error, please try again later
12 search too broad, narrow spatial and/or temporal search criteria
13 no data for selected campaign archived at DAAC, please reconstruct Search Query
14 browse_granules_only selected, but no granules having browse data match
15 global_granules_only selected, but no granules having global coverage match
16 no data for requested processing level at this DAAC, please reconstruct Search Query
17 bad message; protocol error
18 system busy; try again later
19 system error; contact user support
20 data not found due to spatial and/or temporal limitation

103 ASTER GDS limitation on Product Request; all products can not be accepted
104 ASTER GDS limitation on Product Request; number of product request is over the limitation for processing level
105 ASTER GDS limitation on Product Request; number of product request is over the limitation for processing level by user type
106 ASTER GDS limitation on Product Request; number of product request is over the limitation for user type
107 ASTER GDS limitation on Product Request; number of product request is over the limitation for media type
109 ASTER GDS PG parameter error

1000 user-requested abort of search

Keyword: STATUS_CODE_COMMENT
Synopsis: Data Center provided commentary related to status code for communications.
Parent Group(s): [INVENTORY_RESULT], [DIRECTORY_RESULT], [INTEGRATED_BROWSE_RESULT], [PRODUCT_RESULT], [QUIT], [PRODUCT_STATUS_INFO], [PRICE_ESTIMATE_RESULT], [PRODUCT_CANCEL_RESULT]
ODL Type: sequence string
Maximum Length: 128

Keyword: STOP_DATE
Synopsis: Date terminating interval of temporal interest.
Parent Group(s): GRANULE, [DIRECTORY_SEARCH], [DIRECTORY_RESULT], [INVENTORY_SEARCH]
ODL Type: Date
Maximum Length: 20
Possible value(s): yyyy-mm-ddThh:mm:ss | yyyy-mm-ddThh:mm:ssZ
Keyword: STOP_DAY_OF_YEAR
Synopsis: Ending day of seasonal interest.
Parent Group(s): [INVENTORY_SEARCH]
ODL Type: Date
Maximum Length: 3
Possible value(s): 1 to 366

Keyword: TANGENT_LATITUDE
Synopsis: Current tangent (center) latitude of projection map.
Parent Group(s): POLYGON_LOC
ODL Type: Real
Maximum Length: 8
Possible value(s): -90.0000 to +90.0000

Keyword: TANGENT_LONGITUDE
Synopsis: Current tangent (center) latitude of projection map.
Parent Group(s): POLYGON_LOC

ODL Type: Real
Maximum Length: 9
Possible value(s): -180.0000 to +180.0000

Keyword: TITLE
Synopsis: Part of the User Profile. A user's formal designation.
Parent Group(s): [CONTACT_ADDRESS], [SHIPPING_ADDRESS], [BILLING_ADDRESS]
ODL Type: String
Maximum Length: 5

Keyword: TX_CLIENT
Synopsis: Time stamp when client transmitted entire ODL message.
Parent Group(s): MONITOR group
ODL Type: Sequence STRING
Maximum Length: 20
Possible value(s): two part: seconds (required), microseconds (optional)
Note: integer number of seconds as returned by the time () call or the gettimeofday call

Keyword: TX_SERVER
Synopsis: Time stamp when server transmitted entire ODL message.
Parent Group(s): MONITOR group
ODL Type: Sequence STRING
Maximum Length: 20
Possible value(s): two part: seconds (required), microseconds (optional)
Note: integer number of seconds as returned by the time () call or the gettimeofday call

Keyword: TYPE
Synopsis: Affiliation categories: Government, Commercial, Academic, Other.
Parent Group(s): USER_AFFILIATION
ODL Type: String
Maximum Length: 15
Note: ASTER GDS definition might not fit into the above definition.

Keyword: TYPE_ID
Synopsis: The valid values for selected media types.
Parent Group(s): MEDIA_TYPE, SUB_REQUEST_STATUS_INFO, MEDIA
ODL Type: String
Maximum Length: 30

Keyword: UNMAPPED_FIELD
Synopsis: Field(s) given in query not used in inventory search.
Parent Group(s): [INVENTORY_RESULT]
ODL Type: Sequence String
Maximum Length:
Possible value(s): any keyword contained in the INVENTORY_SEARCH group

Keyword: USER_AFFILIATION
Synopsis: General information for user services statistics.
Parent Group(s): PRODUCT_REQUEST, BROWSE_REQUEST
Child Group(s): CATEGORY, TYPE
ODL Type: Aggregate

Keyword: VALID_ACCOUNTS
Synopsis: Contains DAAC provided valid account information associated with a particular data set. Is an optional or a repeating group.
Parent Group(s): [DATASET]
Child Group(s): ACCOUNT_NUMBER, [BALANCE], [ERROR]
ODL Type: Group
Notes:
1. There may be 0 valid account groups sent in inventory/data set group.
2. If the user has no valid account, then 1 valid account group will be sent containing only the error object with information to instruct or inform the user.
3. For cases with multiple accounts, many valid accounts groups will be sent, each containing mandatory account number with optional balance and error fields.
4. ASTER GDS does not return this keyword.

Keyword: VERSION
Synopsis: Information identifying the client and server version
Parent group(s): Used in all message types
ODL Type: Aggregate
Maximum Length: N/A

Keyword: WEST_LONGITUDE
Synopsis: Western most longitude for an area on the globe.
Parent Group(s): RANGE_LOC
ODL Type: Real
Maximum Length: 9
Possible value(s): -180.0000 to +180.0000

//No longer necessary, deleted.

Keyword: ZIP
Synopsis: US Postal ZIP code for associated person.
Parent Group(s): [BILLING_ADDRESS], [CONTACT_ADDRESS], [SHIPPING_ADDRESS], [DAAC_CONTACT_ADDRESS]
ODL Type: String
Maximum Length: 15
Possible value(s): any string

B.2 ODL Message Keywords for Required Extensions

This section identifies and defines the ODL Message Keywords which are ASTER GDS extensions to the V0 ODL specificiation.

Keyword: CLOUD_COVERAGE
Synopsis: Percent of cloud coverage for granule
Parents Group: [INVENTORY_SEARCH]
Child Group: Not Used
ODL Type: Integer
Note: This keyword is used as user's search parameter. This value is for quadrant scene.

Keyword: COMPLETION_DATE
Synopsis: Actual date that Product Request is completed.
Parent Group: [ORDER_STATUS_INFO], [SUB_REQUEST_STATUS_INFO]
Child Group: Not Used
ODL Type: String
Maximum Length: 10
Possible Value(s): yyyy-mm-dd
Note: In the case that STATUS_CODE is "COMPLETED", STATUS_INFO group incorporates this keyword.
ASTER GDS does not return COMPLETION_DATE under SUB_REQUEST_STATUS_INFO.

Keyword: DATA_CENTER_NAME
Synopsis: The name of the Data Center that archives the data set. Examples of this would be GSFC, LaRC, etc.
Parent Group(s): DATA_SET_CONTACT
ODL Type: String
Maximum Length: 20
Keyword: DATA_CENTER_URL
Synopsis: The Universal Reference Locator for accessing the data center.
Parent Group(s): [DATA_SET_CONTACT]
ODL Type: String
Maximum Length: 64

Keyword: DATA_SET_CONTACT
Synopsis: Iinformation for contacting data center for a particular data set.
Parent Group(s): [DIRECTORY_RESULT]
Child Group(s): DATA_CENTER_LONGNAME, [DATA_CENTER_URL], [FIRST_NAME], [MIDDLE_INITIAL], [LAST_NAME], PHONE, [FAX], EMAIL, ADDRESS
ODL Type: Aggregate

// The following replaces the previous DATASET_SUMMARY
Keyword: DESCRIPTION

Synopsis: Identifies the major emphasis of the content of the collection. This can be a long textual description, therefore it is left unbounded at this time.
Parent Group(s): DATASET group for DIRECTORY_RESULT
ODL Type: String
Maximum Length: unlimitedKeyword: DISCIPLINE
Synopsis: Keyword(s) used to describe the general discipline area of the collection. A collection can conceivably cover several disciplines. Examples include Earth Science, Space Science, etc.
Parent Group(s): DATASET group for DIRECTORY_RESULT
ODL Type: Sequence String
Maximum Length: 24

Keyword: EASTBOUNDINGCOORDINATE
Synopsis: Eastern-most limit of coverage expressed in longitude.
ODL Type: Float
Maximum Length: (11)-(6)
Possible Values: -180.0 to +180.0

Keyword: ESTIMATED_PRICE
Synopsis: Estimated total price of products
Parent Group: PRICE_ESTIMATE_RESULT
Child Group: Not Used
ODL Type: Integer
Note: The unit is Yen.

Keywords: INITIATOR_REQUEST_ID
Synopsis: ID assigned by the ASTER Gateway or ASTER GDS IMS to track Product Request. This is a single value when passed in a Product Request message.
Parent Group: PRODUCT_REQUEST, PRODUCT_STATUS_REQUEST, ORDER_STATUS_INFO, PRODUCT_CANCEL_REQUEST, PRODUCT_CANCEL_RESULT
Child Group: Not Used
ODL Type: Sequence String
Maximum Length: 30
Note:
1. When ECS client submits Product Request, ASTER Gateway generates this ID.
2. When ASTER GDS client submits Product Request, ASTER GDS IMS generates this ID.

Recommend deletion of the following attributes since the ECS data model no longer supports these. If ASTER GDS wants to retain, then we will, but ECS will never return these as the result of a search.

Keyword: MEDIA
Synopsis: Media information for Product Request.
Parent Group: PRICE_ESTIMATE_REQUEST, PRODUCT_REQUEST
Child Group: MEDIA_TYPE, MEDIA_FORMAT, PRODUCT_DELIVERY
ODL Type: Aggregate

Recommend deletion of the following attributes since the ECS data model no longer supports these. If ASTER GDS wants to retain, then we will, but ECS will never return these as the result of a search:

Keyword: NORTHBOUNDINGCOORDINATE
Synopsis: Northern-most coordinate of the limit of coverage expressed in geodetic latitude.
Parent Group(s): SPATIAL_COVERAGE
ODL Type: Float

Possible values: -90.0 to +90.0
Keyword: ORDER_STATUS_CODE
Synopsis: Provides the status for a order status request.
Parent Group: [PRODUCT_CANCEL_RESULT], ORDER_STATUS_INFO
Child Group: Not used
ODL Type: String
Possible Value(s): PROPOSED|ACCEPTED|PROCESSING|CANCELED| FAILED
Maximum Length: 10
Note:

1. "PROPOSED"means that Product Request is received by ASTER GDS IMS.
2. "ACCEPTED" means that Product Request is received by ASTER GDS DADS.
3. "PROCESSING" means that Product Request is processed for delivery.
4. "CANCELED"means that all Product Requests added one INITIATOR_REQUEST_ID is canceled because of user's cancel request.
5. "FAILED" means request could not be processed because of an error condition
6. "COMPLETED" means the request has been successfully completed.
7. "REJECTED" means that the request has not been accepted and will not be fulfilled.

Keyword: ORDER_STATUS_INFO
Synopsis: Contains the status information for the order.
Parent Group(s): PRODUCT_STATUS_INFO
Child group(s): INITIATOR_REQUEST_ID, RECEIVE_DATE, PLANNED_COMPLETION_DATE, [COMPLETION_DATE], PRICE, ORDER_STATUS_CODE, [ORDER_STATUS_COMMENT], SHIPPING_ADDRESS, SUB_REQUEST_STATUS_INFO
ODL Type: Aggregate

Keyword: ORDER_STATUS_COMMENT
Synopsis: Ancillary information concerning an order cancellation request.
Parent Group: [PRODUCT_CANCEL_RESULT], [ORDER_STATUS_INFO]
Child Group: Not used
ODL Type: String
Maximum Length: 128

Keyword: PGR_CODE
Synopsis: The identifier of a variable used to specify run-time parameters for generating a product.

Parent Group(s): PARAMETER
ODL Type: String
Maximum Length: 16
Note: The possible value of keywords in “PARAMETER group” is defined by Valids.

Keyword: PGR_VALUE
Synopsis: The value of a run-time parameter used in generating products.
Parent Group(s): PARAMETER
ODL Type: String
Maximum Length: 255
Note: The possible value of keywords in “PARAMETER group” is defined by Valids.

Keyword: PREDICTED_COMPLETION_DATE
Synopsis: Estimated number of days until product is ready for delivery
Parent Group(s): PRICE_ESTIMATE_RESULT Group
ODL Type: Integer
Possible values: 0 to 65335

Keyword: PRICE
Synopsis: Estimated total price of products
Parent Group: ORDER_STATUS_INFO
Child Group: Not Used
ODL Type: Real
Maximum Length:
Note: The unit is Yen.

Keyword: PRICE_COMMENT
Synopsis: Provide the information for price calculation (algorithm, etc.).
Parent Group: [PRICE_ESTIMATE_RESULT]
Child Group: Not Used
ODL Type: Sequence String
Maximum Length: 128
Possible value(s): any string

Keyword: PRICE_ESTIMATE_REQUEST
Synopsis: Provide the information for estimated total price of products that user orders.
Parent Group: Not Used
Child Group: MEDIA, MONITOR, VERSION, MESSAGE_ID, DATA_CENTER_ID,
ODL Type: Aggregate
Note: This request is submitted prior to Product Request.

Keyword: PRICE_ESTIMATE_RESULT
Synopsis: Provide estimated total price of products that user orders.
Parent Group: Not Used

Child Group: MONITOR, MESSAGE_ID, DATA_CENTER_ID, STATUS_CODE, [STATUS_CODE_COMMENT], ESTIMATED_PRICE, [PRICE_COMMENT], PREDICTED_COMPLETION_DATE, VERSION
ODL Type: Aggregate

Keyword: PROCESSING_DATA_CENTER
Synopsis: Data Center which is handling a processing request
Parent Group(s): SUB_REQUEST_STATUS_INFO
Child group(s): None
ODL Type: String
Note: This is returned from ECS only.

Keyword: PRODUCT_DELIVERY
Synopsis: Delivered product and generated product
Parent Group: MEDIA
Child Group: [PRODUCT_GENERATION], DATASET_ID, PACKAGE_ID, SENSOR_TYPE
ODL Type: Aggregate
Note:
1. When user requests delivery of product only, "DATASET_ID" and "PACKAGE_ID" incorporated in PRODUCT_DELIVERY group mean delivered product. In this case, PRODUCT_DELIVERY group doesn't incorporate PRODUCT_GENERATION group.
2. When user requests generation and delivery of product, "DATASET_ID" and "PACKAGE_ID" incorporated in PRODUCT_DELIVERY group mean source product for generation. In this case, PRODUCT_DELIVERY group incorporates PRODUCT_GENERATION group.

Keyword: PRODUCT_GENERATION
Synopsis: Processing level and parameter for product generation.
Parent Group: [PRODUCT_DELIVERY]
Child Group: PARAMETER, PRODUCT_TYPE
ODL Type: Aggregate

Keyword: PRODUCT_STATUS_INFO
Synopsis: Provide processing status of product request after user submits.
Parent Group: Not Used
Child Group: MONITOR, MESSAGE_ID, DATA_CENTER_ID, STATUS_CODE, [STATUS_CODE_COMMENT], ORDER_STATUS_INFO, VERSION
ODL Type: Aggregate
Note: This group incorporates processing status of all granule in some product requests.

Keyword: PRODUCT_STATUS_REQUEST
Synopsis: Provide information for obtaining processing status of product request after user submits.
Parent Group: Not Used
Child Group: MONITOR, VERSION, MESSAGE_ID, INITIATOR_REQUEST_ID
ODL Type: Aggregate

Note: This request must incorporate INITIATOR_REQUEST_ID keyword.

Keyword: PRODUCT_TYPE
Synopsis: Type of product in the case of product generation.
Parent Group: PRODUCT_GENERATION
Child Group: Not Used
ODL Type: Symbol
Maximum Length: 10
Possible Value(s): 1B00 | 2A02 | 2A03
Note: "1B00" means product level 1B. "2A02" and "2A03" means decorrelation stretch. Possible values will be added in the future.

Keyword: PLANNED_COMPLETION_DATE
Synopsis: Planned date that Product Request is completed (after scheduled).
Parent Group: ORDER_STATUS_INFO
Child Group: Not Used
ODL Type: String
Maximum Length: 10
Possible Value(s): yyyy-mm-dd

Keyword: PRODUCT_CANCEL_REQUEST
Synopsis: Provide the information for cancel of Product Request.
Parent Group: Not Used
Child Group: MESSAGE_ID, INITIATOR_REQUEST_ID, [SUB_REQUEST_ID], MONITOR, VERSION
ODL Type: Aggregate

Keyword: PRODUCT_CANCEL_RESULT
Synopsis: Provide the response for cancel request of Product Request.
Parent Group: Not Used
Child Group: MESSAGE_ID, DATA_CENTER_ID, STATUS_CODE, [STATUS_CODE_COMMENT], INITIATOR_REQUEST_ID, [ORDER_STATUS_CODE], [ORDER_STATUS_COMMENT], [SUB_REQUEST_INFO], MONITOR, VERSION
ODL Type: Aggregate
Note: In the case of ASTER GDS, this group means the reception for Product Cancel Request. From this group, ECS client can not know if Product Request is canceled. From Product Status Information, ECS client can know if Product Request is canceled.
ASTER GDS understands that ECS returns the PRODUCT_CANCEL_RESULT that includes each success/fail and comment for requests attempted to be canceled.

Keyword: QUADRANT_CLOUD_COVERAGE (for ASTER GDS only)
Synopsis: Percent of cloud coverage for quadrant scene.
Parents Group: [GRANULE]
Child Group: Not Used
ODL Type: Sequence Integer

Note: This keyword means the cloud coverage percentages for 4 quarters of a scene in the order of : upper left -> upper right -> lower left -> lower right

Keyword: RECEIVE_DATE
Synopsis: The date that the request was received.
Parent Group(s): ORDER_STATUS_INFO
Child group(s): Not used
ODL Type: Date
Maximum Length: 20
Possible value(s): yyyy-mm-ddThh:mm:ss | yyyy-mm-ddThh:mm:ssZ

ODL Keyword: REQUEST_STATUS_CODE
Synopsis: Provides the cancellation status for a sub-request associated with an order request.
Parent Group: SUB_REQUEST_STATUS_INFO, [SUB_REQUEST_INFO]
Child Group: Not used
ODL Type: String
Possible Values: PROPOSED|ACCEPTED|PROCESSING|CANCEL| FAILED
Comment: The definition of value provided by ASTER SDPS is shown as follows.

1. "PROPOSED" means that Product Request is received by ASTER GDS IMS.
2. "ACCEPTED" means that Product Request is received by ASTER GDS DADS.
3. "PROCESSING" means that Product Request is processed for delivery.
4. "CANCELED" means that Product Requests is canceled because of user's cancel request.
5. "FAILED" means that Product Request including generation parameter is failed during "PROCESSING" because of generation parameter error.
6. "COMPLETED" means the request has been successfully completed.
7. "REJECTED" means that the request has not been accepted and will not be fulfilled.

Maximum Length: 10

Keyword: REQUEST_STATUS_COMMENT
Synopsis: Ancillary information concerning a request for cancellation of a sub-request.
Parent Group: [SUB_REQUEST_STATUS_INFO], [SUB_REQUEST_INFO]
Child Group: Not used
ODL Type: String
Maximum Length: 128

Keyword: SCENE_CLOUD_COVERAGE (for ASTER GDS only)
Synopsis: Average percent of cloud coverage for scene.
Parents Group: [GRANULE]
Child Group: Not Used
ODL Type: Integer
Note: This value is for the whole scene

Keyword: SENSOR_TYPE.
Synopsis: The type of sensor to be delivered with the product.
Parent Group(s): PRODUCT_DELIVERY

Child group(s): not used
ODL Type: Sequence String
Possible Value(s): "VST", "V ", " S ", " T", "VS ", " ST", "V T"
Note: The possible value of "SENSOR_TYPE" for delivery product type is defined by Valids.

Keyword: SOUTHBOUNDINGCOORDINATE
Synopsis: Southern-most limit of coverage expressed in geodetic latitude.
Parent Group(s): SPATIAL_COVERAGE
ODL Type: Float(10.6)
Possible values: -90.0 to +90.0 (must be less than NORTHBOUNDINGCOORDINATE)

Keyword: SPATIAL_COVERAGE
Synopsis: The spatial coverage of a data set. This is the maximum of all the granules of the data set combined.
Parent Group(s): DATASET group for DIRECTORY_RESULT
Child Group(s): EASTBOUNDINGCOORDINATE, [MAXIMUM_ALTITUDE], [MAXIMUM_DEPTH], [MINIMUM_ALTITUDE], [MINIMUM_DEPTH], NORTHBOUNDINGCOORDINATE, SOUTHBOUNDINGCOORDINATE, WESTBOUNDINGCOORDINATE
ODL Type: Aggregate.

Keyword: SUB_REQUEST_ID
Synopsis: The identifier of a lower level request. This can be used to get status or cancel a portion of an order rather than the entire order.
Parent Group: SUB_REQUEST_STATUS_INFO, SUB_REQUEST_INFO
Child Group: None
OLD Type: String
Maximum Length: 10
Comment: In ECS this is a character string in order to provide uniqueness across sites. Since in ASTER GDS this is an integer, ASTER can just convert the integer to an ASCII string.

Keyword: SUB_REQUEST _INFO
Synopsis: Aggregate describing the subrequest to cancel rather than cancelling the entire order.
Parent Group: [PRODUCT_CANCEL_RESULT]
Child Group: SUB_REQUEST_ID, [REQUEST_STATUS_CODE], [REQUEST_STATUS_COMMENT]
OLD Type: Aggregate

Keyword: SUB_REQUEST_STATUS_INFO
Synopsis: Aggregate describing the status of a sub request.
Parent Group: ORDER_STATUS_INFO
Child Group: SUB_REQUEST_ID, REQUEST_STATUS_CODE, [REQUEST_STATUS_COMMENT], [COMPLETION_DATE], [PROCESSING_DATA_CENTER], MEDIA_TYPE, MEDIA_FORMAT, DATASET_ID, [NUMBER_OF_GRANULES]
OLD Type: Aggregate

Keyword: TERM
Synopsis: Keyword used to describe the science parameter area of the collection. A collection can conceivably cover many such parameters.
Parent Group(s): DATASET group for DIRECTORY_RESULT
ODL Type: Sequence String
Maximum Length: 50

Keyword: TOPIC
Synopsis: Keyword used to describe the general topic area of the collection. A collection can conceivably cover several topics. Examples include: Atmospheric Science, Biosphere, Land Surface, etc.
Parent Group(s): DATASET group for DIRECTORY_RESULT
ODL Type: Sequence String
Maximum Length: 32

Keyword: VARIABLE
Synopsis: Keyword used to describe the specific science parameter content of the collection. A collection can conceivably cover many specific parameters.
Parent Group(s): DATASET group for DIRECTORY_RESULT
ODL Type: Sequence String
Maximum Length: 80

Keyword: WESTBOUNDINGCOORDINATE
Synopsis: Western-most coordinate of the limit of coverage expressed in longitude.
Parent Group(s): SPATIAL_COVERAGE
ODL Type: Float(10.6)

Possible values: -180.0 to +180.0 (must be less than EASTBOUNDINGCOORDINATE)
Keyword: XAR_ID (for ASTER GDS only)
Synopsis: ID for xAR that produced the granule.
Parents Group: [INVENTORY_SEARCH], [GRANULE]
Child Group: Not Used
ODL Type: Sequence Integer
Maximum Length: 4

PRODUCT_STATUS_UPDATE group ::==

MESSAGE_ID

INITIATOR_REQUEST_ID

[PROCESSING_COMMENT]

[COMPLETION_DATE]

ACTUAL_PRICE

MESSAGE_ID and INITIATOR_REQUEST_ID are the same as all the other messages.

PROCESSING_COMMENT - Optional comment to be set as part of the completion status of the Order for the operator's information.

ODL Type: string

Maximum Length: 255

COMPLETION_DATE - Optional date the order became complete for the operator and user's information.

ODL Type: Date

Possible values: <see START_DATE>

Maximum Length: 20

ACTUAL_PRICE - Price in yen of the request. This is used by NASA and ERSDAC in order to bill the user. The ASTER Gateway will convert from or to dollars as appropriate.

ODL Type: Integer

Possible values: >= 0

B.3 Valids Keyword Definitions

The following describes the keywords associated with the valids file exported between ECS and ASTER. Many of these keywords map directly to keywords in the ODL messages for inventory or directory search and result. For these a simple reference to the other keyword is provided. The actual format strings are as specified in section 6.6.

Keyword: ADDRESS
Synopsis: Mail address of the contact person including street address, city/province, country, zip code, etc. This is free text to be created by either side as determined by the contents of their respective databases.
Parent Group: DATA_SET_CONTACT
Child Group: None

ODL Type: String
Maximum Length: 255
Keyword: BROWSE
Synopsis: Group describing the capabilities of the Browse service for a particular data set.
Parent Group: DATASET valids
Child Groups: FTP, INTEGRATED
ODL Type: Aggregate

Keyword: CAMPAIGN
Synopsis: Refer to CAMPAIGN keyword of INVENTORY_SEARCH, etc.

Keyword: DATA_CENTER_NAME
Synopsis: Refer to DATA_CENTER_NAME keyword of DIRECTORY_RESULT, etc.

Keyword: DATA_CENTER_URL
Synopsis: Refer to DATA_CENTER_URL keyword of DIRECTORY_RESULT, etc.

Keyword: DATASET_ID
Synopsis: Refer to DATASET_ID keyword of INVENTORY_SEARCH, etc.

Keyword: DATASET_COVERAGE
Synopsis: Aggregate describing the spatial and temporal characteristics of a collection/data set.
Parent Group: DATASET valids
Child Group: SPATIAL, TEMPORAL
ODL Type: Aggregate

Keyword: DATASET_SHORT_NAME
Synopsis: Short name of the data set. Could be the same as DATASET_ID.
Parent Group: DIRECTORY_PARAMETERS
Child Group: None
ODL Type: String
Maximum Length: 8

Keyword: DAY_NIGHT_FLAG
Synopsis: Refer to DAY_NIGHT of INVENTORY_SEARCH, etc.

Keyword: DESCRIPTION
Synopsis: Refer to DESCRIPTION of DIRECTORY_RESULT, etc.

Keyword: DEPENDENCY
Synopsis: Group describing the dependencies between SENSOR, SOURCE, and PARAMETER.
Parent Group: DATASET valids
Child Group: SENSOR, SOURCE, PARAMETER
ODL Type: Aggregate

Keyword: DISCIPLINE
Synopsis: Refer to DISCIPLINE keyword of DIRECTORY_RESULT, etc.

Keyword: DIRECTORY_PARAMETERS
Synopsis: Group describing the information required for the ECS Advertising Service description of data sets or collections (ECS terminology).
Parent Group: DATASET valids
Child Group: DESCRIPTION, DATASET_SHORT_NAME, DISCIPLINE, TOPIC, TERM, VARIABLE, SPATIAL_COVERAGE, DATA_SET_CONTACT
ODL Type: Aggregate

Keyword: EASTBOUNDINGCOORDINATE
Synopsis: Refer to EASTBOUNDINGCOORDINATE of DIRECTORY_RESULT, etc.

Keyword: EMAIL
Synopsis: Electronic mail address of the contact person
Parent Group: DATA_SET_CONTACT
Child Group: None
ODL Type: String
Maximum Length: 255

Keyword: FAX
Synopsis: Fax number of the contact person
Parent Group: DATA_SET_CONTACT
Child Group: None
ODL Type: String
Maximum Length: 23

Keyword: FIRST_NAME
Synopsis: First Name of the contact person
Parent Group: DATA_SET_CONTACT
Child Group: None
ODL Type: String
Maximum Length: 255

Keyword: FTP
Synopsis: Defines whether FTP Browse service is available.
Parent Group: BROWSE
Child Groups: None
ODL Type: String
Maximum Length: 3
Possible values: yes, no

Keyword: GRANULE_COVERAGE

Synopsis: Aggregate describing the spatial and temporal characteristics of the granules within the data set.
Parent Group: DATASET valids
Child Groups: SPATIAL, TEMPORAL
ODL Type: Aggregate

Keyword: INTEGRATED
Synopsis: Defines whether INTEGRATED Browse service is available.
Parent Group: BROWSE
Child Groups: None
ODL Type: String
Maximum Length: 3
Possible values: yes, no

Keyword: LAST_NAME
Synopsis: Last Name of the contact person
Parent Group: DATA_SET_CONTACT
Child Group: None
ODL Type: String
Maximum Length: 255

Keyword: MEDIA_FORMAT
Synopsis: Possible formatting options that can be returned in the packaging information.
Parent Group: PRODUCT_REQUEST valids
Child Group: None
ODL Type: String
Maximum Length: 255

Keyword: MEDIA_TYPE
Synopsis: Possible media types returned in the packaging information. Examples include CD-ROM, 8MM, etc.
Parent Group: PRODUCT_REQUEST valids
Child Group: None
ODL Type: String
Maximum Length: 20

Keyword: MIDDLE_NAME
Synopsis: Middle Name of the contact person
Parent Group: DATA_SET_CONTACT
Child Group: None
ODL Type: String
Maximum Length: 255

Keyword: NORTHBOUNDINGCOORDINATE
Synopsis: Refer to NORTHBOUNDINGCOORDINATE of DIRECTORY_RESULT, etc.

Keyword: PARAMETER
Synopsis: Refer to PARAMETER of INVENTORY_SEARCH, etc.

Keyword: PHONE
Synopsis: The phone number of the contact person
Parent Group: DATA_SET_CONTACT
Child Group: None
ODL Type: String
Maximum Length: 23

Keyword: PROCESSING_LEVEL
Synopsis: Refer to PROCESSING_LEVEL of INVENTORY_SEARCH, etc.

Keyword: PRODUCT_REQUEST
Synopsis: Describes formats possible for product request services.
Parent Group: DATASET valids
Child Group: MEDIA_TYPE, MEDIA_FORMAT
ODL Type: Aggregate

Keyword: SENSOR
Synopsis: Refer to SENSOR_NAME of INVENTORY_SEARCH, etc.

Keyword: SERVICES
Synopsis: Group describing the services available on the dataset. The services consist of Browse, Product Request, and any number of processing request services.
Parent Group: DATASET valids
Child Groups: BROWSE, PGR, PRODUCT_REQUEST
ODL Type: Aggregate

Keyword: SOURCE
Synopsis: Refer to SOURCE_NAME keyword of INVENTORY_SEARCH, etc.

Keyword: SOUTHBOUNDINGCOORDINATE
Synopsis: Refer to SOUTHBOUNDINGCOORDINATE of DIRECTORY_RESULT, etc.

Keyword: SPATIAL
Synopsis: Keyword describing the spatial characteristics of the granule or data set. For example, Global, North America, etc. The GCMD list of Location Keywords will most likely be the list supported within ECS.
Parent Group(s): DATASET_COVERAGE, GLOBAL_COVERAGE
Child Group(s): None
ODL Type: String
Maximum Length: 10

Keyword: SPATIAL_COVERAGE
Synopsis: Refer to SPATIAL_COVERAGE group of DIRECTORY_RESULT, etc.

Keyword: TEMPORAL
Synopsis: Text describing the temporal characteristics of the granule or data set. For the data set coverage, this should describe the valid range of temporal constraints. For the granule coverage, this should describe the temporal characteristics of the granule, for example, 1 day, 1 month, etc.
Parent Group(s): DATASET_COVERAGE, GLOBAL_COVERAGE
Child Group(s): None
ODL Type: String
Maximum Length: 30
Possible values: MM/DD/YYYY - MM/DD/YYYY | present for DATASET_COVERAGE and free text for GRANULE_COVERAGE

Keyword: TERM
Synopsis: Refer to TERM keyword of DIRECTORY_RESULT, etc.

Keyword: TOPIC
Synopsis: Refer to TOPIC keyword of DIRECTORY_RESULT, etc.

Keyword: VARIABLE
Synopsis: Refer to VARIABLE keyword of DIRECTORY_RESULT, etc.

Keyword: WESTBOUNDINGCOORDINATE
Synopsis: Refer to WESTBOUNDINGCOORDINATE of DIRECTORY_RESULT, etc.

B.4 Server State Table

This table shows transfer of processing in server when server receives each request. Italic and bold characters mean processing regarding extension.

Table B-1. Server States (1 of 3)

State and action taken	Event (returned by action)	New State
Accept	Got Inventory Search	Query for Granules
	Got Directory Search (only ECS)	Query Advertisements
	Got Int. Browse Request	Process Int. Browse Request
	Got Price Estimate Request	Process Price Estimate Request
	Got Product Request	Process Product Request
	Got Product Status Request	Process Product Status Request
	Got Product Cancel Request	Process Product Cancel Request
	Got No Data	Accept
	Got ABORT	Stop
	Got QUIT	STOP
	Server Crash	Stop
	Server System Error	Stop
	Errors(returned from ECS)	Tx QUIT [status code: 17, 18]
	Errors(returned from ASTER GDS)	Tx QUIT [status code: 9, 17, 18]
Query for Granules	Query Success	Build First Chunk
	Errors(returned from ECS)	Tx QUIT [status code: 2-16, 19, 20]
	Errors(returned from ASTER GDS)	Tx QUIT [status code: 2, 7, 9, 11, 16]
action: Query Inventory		
Build First Chunk	Fetch Granule Success	Tx Inventory Result Chunk
	Errors(returned from ECS)	Tx QUIT [status code: 11, 19]
	Errors(returned from ASTER GDS)	Tx QUIT [status code: 11]
action: Fetch Granule		
Build Next Inv. Result Chunk	Fetch Granule Success	Tx Inventory Result Chunk
	Fetch Granule Complete	Tx QUIT [status code: 1]
	Errors(returned from ECS)	Tx QUIT [status code: 11, 19]
	Errors(returned from ASTER GDS)	Tx QUIT [status code: 11]
action: Check Status of Last Fetch		
Tx Inventory Result Chunk	Client Down	Close
	Server Crash	Stop
	Send Granules Success	Listen Search ACK
	Errors(returned from ECS)	Tx QUIT [status code: 11, 19]
	Errors(returned from ASTER GDS)	Tx QUIT [status code: 11]
action: Send Granule to Client and Fetch Next Chunk		
Listen Search ACK	Got Search Result ACK	Build Next Inv. Result Chunk
	Got QUIT	Close
	Got ABORT	Close
	Errors	Tx QUIT [status code: 17]
action: Listen Search ACK		
Query Advertisements	Query Success	Tx Directory Result
	Errors	Tx QUIT [status code: 2-11, 13, 19, 20]
action: Query Directory		
Tx Directory Result (only ECS)	Send Success	Close
	Client Down	Close
	Server Crash	Stop
	Errors	Tx QUIT [status code: 11, 19]

Table B-1. Server States (2 of 3)

State and action taken	Event (returned by action)	New State
Process Int. Browse Request	Process Success	Build Integrated Browse ODL
	Errors	Tx QUIT [status code: 2, 8-11, 19]
action: Get Image		
Build Integrated Browse ODL	Build Success	Tx Integrated Browse ODL
	Errors(returned from ECS)	Tx QUIT [status code: 11, 19]
	Errors(returned from ASTER GDS)	Tx QUIT [status code: 2, 9, 11]
action: Build Int. Browse ODL		
Tx Integrated Browse ODL	Send Success	Tx Integrated Browse Image
	Server Crash	Stop
	Client Down	Close
	Errors(returned from ECS)	Tx QUIT [status code: 11, 19]
	Errors(returned from ASTER GDS)	Tx QUIT [status code: 11]
action: Send Int. Browse ODL to Client		
Tx Integrated Browse Image	Send Success	Tx Integrated Browse image
	Send Complete	Close
	Server Crash	Stop
	Client Down	Close
	Got ABORT	Close
	Got QUIT	Close
	Errors(returned from ECS)	Tx QUIT [status code: 11, 19]
	Errors(returned from ASTER GDS)	Tx QUIT [status code: 11]
action: Send Int. Browse Image to Client		
Process Price Estimate Request	Process Success	Tx Price Estimate Result
	Errors(returned from ECS)	Tx QUIT [status code: 11, 19]
	Errors(returned from ASTER GDS)	Tx QUIT [status code: 9, 11]
action: Process Price Estimate Request		
Tx Price Estimate Result	Send Success	Close
	Client Down	Close
	Server Crash	Stop
	Errors(returned from ECS)	Tx QUIT [status code: 11, 19]
	Errors(returned from ASTER GDS)	Tx QUIT [status code: 11]
action: Send Price Estimate Result to Client		
Process Product Request	Process Success	Tx Product Request Contact Info
	Errors(returned from ECS)	Tx QUIT [status code: 9-11, 19]
	Errors(returned from ASTER GDS)	Tx QUIT [status code: 11, 103-107, 109]
action: Process Product Request		
Tx Product Request Contact Info	Send Success	Close
	Client Down	Close
	Server Crash	Stop
	Errors(returned from ECS)	Tx QUIT [status code: 11, 19]
	Errors(returned from ASTER GDS)	Tx QUIT [status code: 11]
action: Send Product Request to Client		

Table B-1. Server States (3 of 3)

State and action taken	Event (returned by action)	New State
Process Product Status Request	Process Success	Tx Product Status Info
	Errors(returned from ECS)	Tx QUIT [status code: 11, 19]
	Errors(returned from ASTER GDS)	Tx QUIT [status code: 2, 9, 11]
action: Process Product Status Request		
Tx Product Status Info	Send Success	Close
	Client Down	Close
	Server Crash	Stop
	Errors(returned from ECS)	Tx QUIT [status code: 11, 19]
	Errors(returned from ASTER GDS)	Tx QUIT [status code: 11]
action: Send Product Status Info to Client		
Process Product Cancel Request	Process Success	Tx Product Cancel Results
	Errors(returned from ECS)	Tx QUIT [status code: 11, 19]
	Errors(returned from ASTER GDS)	Tx QUIT [status code: 2, 9, 11]
action: Process Product Cancel Request		
Tx Product Cancel Results	Send Success	Close
	Client Down	Close
	Server	Stop
	Errors(returned from ECS)	Tx QUIT [status code: 11, 19]
	Errors(returned from ASTER GDS)	Tx QUIT [status code: 11]
action: Send Product Cancel Results to Client		
Tx QUIT[]	Send Success	Close
	Server Crash	Stop
	Client Down	Close
	Errors(returned from ECS)	Tx QUIT [status code: 11, 19]
	Errors(returned from ASTER GDS)	Tx QUIT [status code: 11]
action: Send QUIT with Status Code to Client		
Close	Done	Stop
action: Close Communication		

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